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FRANKLIN DELANO ROOSEVELT

Thirty-second President of the United States

AMERICAN FORESTS

Vol. 39 APRIL, 1933 No. 4

EDITORIAL

Conservation Under Roosevelt

FRANKLIN DELANO ROOSEVELT has entered the Presidency of the United States clearly outlined as a staunch friend and advocate of conservation. By his own words he has impressed that fact upon the country and the country as a whole, we believe, has welcomed the assurance that its new President views wise management of natural resources as one of the great problems of the nation. His repeated statements relative to reforestation and land use presage an administration of conservation sympathies and positive treatment of land resource problems, the solution of which he holds to be basic to permanent reconstruction and maintenance of American standards of life. From a conservation standpoint, the new Roosevelt administration therefore begins with a public atmosphere of great expectancy and potential support.

During the campaign, political enemies sought to cast doubt upon the sincerity of Mr. Roosevelt's forestry utterances. If doubt still exists in some minds, its best answer, we believe, is to be found not in his political speeches but in his record as a private citizen and a public servant. Certainly no man has ever entered the White House with a clearer record of conservation interest and accomplishment. As Governor of New York, he broke with the leader of his party to espouse the greatest program of state reforestation in American history. Throughout more than twenty years as a public official of the Empire state, first as a member of the legislature and later as Chief Executive, he exerted his official influence and leadership in behalf of forest protection, reforestation, creation of state forests and parks, statewide planning in the use and development of land resources, and the protection of soils against erosion. As a private citizen, he has practiced forestry on his own lands from the planting of seedlings with his own hands to the harvesting of his tree crops and the beautification of his country estate. His, in short, is a record of practical achievement and broad and intimate contact with the conservation side of land use.

To the national problem of conservation, the President already has brought vision, idealism and humanity — elements it most needs at the present time. They are all to be found in his proposed Tennessee Valley project, in his known views on coordinated land planning, and in his inaugural address of March 4, when he stressed the need to stimulate and reorganize the use of our natural resources and to provide a better use of our land. "The measure of restoration," he declared, "lies in the extent to which we apply social values more noble than mere monetary profit. Happiness lies not in the mere possession of money; it lies in the joy of achievement, in the thrill of creative effort."

His distinguished cousin, Theodore Roosevelt, when President declared conservation to be the most vital internal problem of the country and he proceeded to make it so. It will not be surprising if Franklin Roosevelt does likewise because he envisions the problem in human values and he has the personality and enthusiasm to revitalize the movement into a great creative endeavor for the rehabilitation of a money-jaded and land-wrecked country. If we judge the President rightly, he views forestry, for example, in its larger aspects of social benefits—its contributions to community life and national wealth in the form of productive lands, protected water sources, stable soils, local industries, natural beauty and expanded opportunities for constructive work and for the healthful enjoyment of leisure time. And that is the vision of conservation the country needs most at the present time.

President Roosevelt can go far with conservation. He has entered the Presidency at a critical and opportune time. Millions of acres of devastated lands that are pauperizing communities and hardening opportunities for expanding endeavor are on the national conscience. So, too, is the question of where millions of young men in America in years to come may find an outlet for their desire for work, careers and homes. A century of exploitation has brought the country to the cross roads of land use. Thinking people everywhere, we believe, are eager for a turn that will usher in a century of land rehabilitation. If out of this depression with its trails of human sufferings and hopeless outlooks we as a nation can lift ourselves to the great creative endeavor of rebuilding our land, we will have set ourselves and our children on a road far more challenging, more inspiring, more promising in achievements than was the challenge of the past century to exploit God-given resources and to convert them into evanescent profits.

The mobilizing power to that end is a national plan and a national leader. The new President can supply both and in doing so he will earn an enduring place in American history.

RECLAIMING TENNESSEE LANDS

How Reforestation Can Contribute to the Reconstruction of Eroded Soils in the Tennessee Valley

By R. S. MADDOX

Former State Forester of Tennessee

PRESIDENT ROOSEVELT has focused the eyes of the nation upon the Tennessee Valley. Here he visions a great experiment where the American people may demonstrate their ability through democratic government to reconstruct the land in which they live on the principle that permanent prosperity and human happiness rests upon the interdependence of man and nature.

To those who know the region as of old the President's words bring a picture of mountains carpeted with forests, clear running streams and rivers, valleys with soil intact, deep and fertile. The half century has changed the picture. Mountain sides have been stripped of their forests, streams and rivers have risen in flood, thousands of acres of valley and home lands have been gullied and washed to the gulf. The waters of the Tennessee river are today carrying a load of silt estimated by W. W. Ashe in United States Department of Agriculture Bulletin 1430 at 11,000,000 tons annually. The President has stressed reforestation as one important measure of reconstruction. To the layman reforestation as used by the President undoubtedly suggests the planting of trees. Its scope is much broader and its program much more diversified. Nearly twenty - three thousand square miles of the Tennessee river watershed is made up of land chiefly adapted to forest growth. The value of maintaining proper forest conditions on these lands lies not only in the economic production of wood but much more in the influence of forest cover upon the welfare of the region as a whole. The reason is that these forest lands exercise great influence upon the flow of water in the valley, and control and utilization of water is really the key to reconstruction. In the headwaters of the river and its tributaries, therefore, reforestation calls for a great variety of work, not

The upper picture, taken in Hardeman County, Tennessee, is typical of hundreds of thousands of acres in the Tennessee Valley. In some sections eighty to ninety per cent of all cultivated land has been ruined by erosion. One of the major problems of reconstruction is to stop the accelerated process of soil gullying and to restore eroded lands to usefulness. Reforestation has provided an answer. The lower picture is of the same area taken three years later, after the gullies were dammed and black locust planted. Note the leveling effect of the reclamation work.

only in planting trees where natural reproduction will not provide the forest cover required but in protecting the forest lands from fire, erosion and other processes that destroy their beneficial influence upon stream control. Where second growth forests already occur it calls for proper thinnings to promote better growth, and to convert the forest to species of trees of greatest utility. It calls in short for the reconstruction of forest and vegetative cover to its most beneficial relationship to the streams, the soils and the utilization of water throughout the valley.

But the contribution of reforestation does not stop here. It extends far beyond the mountain slopes at headwaters down into valleys and out into the rolling agricultural sections where outraged nature is making life hard and barren. According to the Secretary of Agriculture there are over twenty-one million acres of farm soil in the United States which have passed out of cultivation because of destructive erosion. The Tennessee Valley and virtually the whole State of Tennessee is in the belt of heavy erosion and to one who has witnessed the extent of gullied lands in the State, the destruction is appalling and the problem of reconstruction impressive. Mr. H. H. Bennett, of the United States Department of Agriculture, recently stated that there has probably been proportionately more land destruction by erosion in the Tennessee Valley than in any other part of the country.

"We have made very general surveys only in these regions," he stated, "and consequently have only rough estimates of the damage. Recently I found on practically every slope cultivated long enough for the stumps to have decayed that either clay subsoil or gullies are in evidence all the way from the vicinity of Birmingham, Alabama, nearly to Bristol, Tennessee. In one section twelve miles long, it was estimated that eighty-five per cent of all the cultivated land as far as one could see to east and west had been ruined by gullying. Part of the remainder was still covered with the fine hardwoods that once occupied all of this splendid area. Much of it originally was of the best type of upland to be found anywhere in the eastern part of the nation, the Decatur silt loam. Throughout a distance of 300 miles, largely limestone country and originally highly productive, not a single instance was observed where anything had been done to check the wholesale devastation by gullying and sheet washing, aside from the throwing of a bit of brush into an occasional gully."

As a native of the State, I have spent better than sixteen years studying and dealing with the erosion situation in the Tennessee Valley and adjacent lands of the State.

These pictures show reclamation through reforestation still further advanced. The area is in Weakley County. The upper picture shows results a few years following the building of brush dams and the planting of trees in 1921. The lower picture is of the same area, photographed in 1929, only eight years after reclamation began. Note the dense cover provided by the black locust. The erosion has been stopped and the land is now a potential forest and an asset to farm and Valley.

I do not know what part of the twenty-one million acres of farm land wrecked by erosion in this country are in Tennessee. The Department of Agriculture at Washington says the figure is large but unknown. I believe it will exceed a million acres and that it is destroying Tennessee farms and homes and agriculture at an increasingly alarming rate. Regardless of figures, one very important question of reconstruction is, "Can this progress of erosion be stopped and values restored to some of the once fertile lands destroyed?"

My own experience of sixteen years answered the question in the affirmative, and the answer was found in reforestation. In 1914, I inaugurated forestry work in Tennessee as State Forester and at once came face to face with the question of erosion which even then was becoming urgent. The situation was particularly acute in the western part of the State, about half of which lies in the Tennessee river drainage area. The topography is typical farm country with a high percentage of level or slightly rolling land of good soil, composed of sand and clay in such admixmixture that on slopes it erodes very readily. Areas badly gashed by gullies so large that a small house would be lost to view in them are today not uncommon. Pictures of these sections remind one of devastated parts of China.

This was once poor land, an eroded area in Williamson County. It has been brought back by the planting of black locust trees which, in a few years more, will provide high quality fence posts and other saleable farm products.

In undertaking this particular reclamation work it was recognized at the outset as primarily a forest and farm problem. The farmer's interest and cooperation was, therefore, engaged and many a mile have I traveled by horse and buggy or afoot to talk over the problem with farmers and to induce them to undertake with me experiments to reclaim portions of their farms that had been destroyed by erosion. Many of the farmers looked upon these areas growing in size each year as a necessary evil, but when they saw hope of possibly stopping the process and saving these areas, their willingness to cooperate was most gratifying. The result was that the farmers and I did the actual work.

Having observed in earlier days on my father's farm the beneficial effect of black locust on impoverished and gullied land, my immediate decision was to use this tree in a reforestation program. The tree seemed especially suited for the work because it is very hardy, grows rapidly and has a broad surface root system. When only two or three years old its roots may run a distance of twenty-five feet. In addition it has a remarkable sprouting capacity which enables it when cut to reproduce itself without planting. These characteristics make for rapid soil binding and the tree itself has high economic value in that it enriches the soil, matures quickly and yields fence posts of high value. Our program, however, was not confined wholly to black locust, for it was recognized that not all waste land should be reclaimed by tree planting, and that even by the reforestation method some farmers might desire to grow other species of trees. Our plans, therefore, admitted other forms of vegetation such as Bermuda grass, honeysuckle and kudzu vine, which are effective in holding the soil when the run-off is not too heavy. By experience extending through the years the following method was found to be both practical and successful in stopping erosion on these Tennessee lands and in restoring the areas to productive values.

Before any reforestation was attempted temporary dams were constructed in the gullies for the purpose of catching soil and holding it in place so that young trees when planted could establish their root systems. These temporary dams, of course, had to be inexpensive and easily built and we put much time and thought upon them in the early days. Ordinarily brush dams are made with limb tops turned up or down stream, but we found by experience that the most effective dams were constructed by first placing a layer of limbs in the bottoms of the gullies crosswise to the stream beds. In this position the sides of the limbs caught and held the dirt as it was washed against them. Although it was difficult for flood waters to remove them, once they became bedded, it was found advisable to further strengthen them during the process of dam building by placing a layer of larger limbs lengthwise in the gullies, their butts resting on the portion of the dam already constructed and their tops lying up-stream. This process of alternating the layers of brush was continued until the dam was high enough—usually from one foot to three feet—to catch the necessary amount of soil. When this point was reached small logs or heavy limbs, cut into convenient lengths, were laid on the top of the dam as weights.

After the temporary dams were completed, it was found necessary to slough off the tops of the gullied banks and their sides by digging, plowing or dynamiting in order to provide loose earth that would wash down into the dams and thus provide sufficient soil in which to plant our trees. When all the gullies of a given waste area were provided with temporary dams and the dams had caught sufficient soil, tree planting operations were begun, usually in March or April. One year old locust trees were used for planting and were set from five and one-half feet to six feet apart on the plowed sections between the gullies, along the sides of the banks and in the dirt retained by the temporary dams.

Sometimes the gully banks were (*Continuing on page* 173)

WHEN PINE WAS KING

By JAMES MACGILLIVRAY

The Memorial

CROWNING a pinnacle of the dune-like banks of Michigan's famous AuSable River stands the most unique memorial in America, with the exception, perhaps, of that equestrian statue of Buffalo Bill which looks down from its mountain perch on the arena of the old West.

The AuSable memorial honors Michigan's pioneer lumbermen, displaying in Robert Aitkin's superb art three great bronze figures—the cruiser, the axman and the sawyer. It typifies for the woodsmen of the Great Lakes region, which once held the world's best stand of white and red pine timber, the same spirit of pioneering that Cody's memorial symbolizes for the plainsman.

Conceived as an historic marker by R. G. Schreck and T. F. Marston, Michigan reforestation enthusiasts, a fund for the memorial's design and placement was supervised by W. B. Mershon, of Saginaw, nationally known conservationist. It was dedicated July 16, 1932. Preeminence of the AuSable River region in Michigan's early lumbering activities determined its location.

What tales that old river might tell the figures of that bronze assembly could they but quicken and interpret its swirling utterings! It could tell of the days when men fared forth for fur, for beaver, for otter and for pine-martin pelts. It could tell of the moose and caribou that came, as white-tailed deer still come, to slake their thirst with its clear water, and of the *loup-garou* of the *coureurs de bois*—the wolverine—that with diabolic cunning evaded trap and snare and deadfall. It could tell of the strife of the red-skinned Chippewa and Ottawa with poaching Huron or Miami, and of later strife when Bourbon epaulettes and British coats of red gleamed in the forest aisles.

But the river's best tale would be the narrative of a later era, the days when Pine was King and when its surface flow from Saginaw Bay far north toward the strait of Mackinac was miles and miles of moving wood.

Long since, when most of the highways above Detroit were yet but trapper's trails, men began to consider the tremendous timber stand of this region as a commercial substitute for the dwindling fur trade. When, in 1878, the federal land office proved old surveys and set a minimum of $2.50 an acre on "timber-land" offered at public auction, regional proponents of lumbering as a trade exploited the idea with such success that within two years more than one-third of the gigantic stand was on the Michigan tax roll in private or corporate ownership. At that time the forest tracts were deemed inexhaustible.

Soon portable sawmill equipment began to move up the Huron shore, dray-hauled from lower lake locations. Docks were constructed which afforded landing for boats that gave means of transportation of machinery for great mills. Saginaw, Bay City, Tawas, Oscoda-AuSable, Alpena, Cheboygan and other lumber towns sprang into being. Greatest of these in timber output was Oscoda-AuSable. Practically one community, its municipal nomenclature was established

What tales that old river might tell! Tales of days when Pine was King and its surface was miles and miles of moving wood and of men whose feet moved faster than a magician's hand.

A shot at the skidders, as they utilized gin-pole, chain blocks and team, sending the logs up the rollways to be deftly grasped by the top-loader's hooks and as deftly set in place in the mounting height of timber.

by division where the AuSable entered Lake Huron. For nearly half a century, with day and night shifts for seven months of the year, Oscoda-AuSable mills gave forth a steady clamor of shrieking circulars, chugging gangs and wailing edgers, punctuated by staccato yelps from intermittent trimmers. Three of the score of mills which operated here were the largest capacity lumber plants in the world. From 1891 to 1894 these towns produced more lumber than any other location extant. In 1893 the total cut tallied nearly 500,000,000 board feet. To this might well be added a segregated fifty-million feet that would now be classed as merchantable, then consigned to the burners as waste. At this time 200 miles of Lake Huron marge was fringed with lumber docks, protruding from the shore like teeth on a giant comb. On the east coast of Lake Michigan, with Chicago as a market outlet, Muskegon, Ludington, Manistee, Pentwater and Traverse City had large sawmills. In the Upper Peninsula big tracts of timber were being tapped at Menominee, Manistique, Escanaba, Marquette, Baraga, Ontonagon and other lake ports. Important inland sawmill towns were Cadillac, Grayling, Otsego and Newberry.

Oscoda-AuSable had a less enviable reputation than that of supremacy in lumber manufacture. Its shady renown was a mecca for two-fisted lumberjacks—a rendezvous where they could carouse and fight with little fear of police interference, providing their battling activities stopped short of mayhem or "the boots." To "put the boots" to a prostrate antagonist was not considered good form, unless both parties to the fray waived restrictions at the beginning of the conflict. Many a contestant wore for the remainder of his life the disfiguring marks which the sharp, steel sole-calks of the victor has implanted on his face. "Fighting," the woodsmen philosophers of those days were prone to remark, "is a bad game if you get a good partner." Seldom did the woodsmen fight while in camp or on the drive, though differences while on duty were often provocation for a scrap when they hit town.

Many nationalities and creeds were represented in the large timber camps, but there was no such thing as caste. A lawyer, doctor, or other "white-collar" man, perhaps the victim of rum, might pare potatoes as a chore-boy while another of his kind made up the bunk beds and sprinkled poison to kill blanket insects. A man was held in esteem in accord with his reputation for ability and fair play. The greatest compliment that could be paid a lumberjack was to call him a "good man," which meant an able, willing, resourceful, dependable and daring man. He gloried in the title and was ever ready to assume risk in hazardous places. Repressed on the job except for wholesome work, fed plain digestible food and with successive nights of healthy sleep, his pent self was ready to burst when he came to town. So he invariably went on a "bust."

Lumberjacks might be specialists, such as swampers,

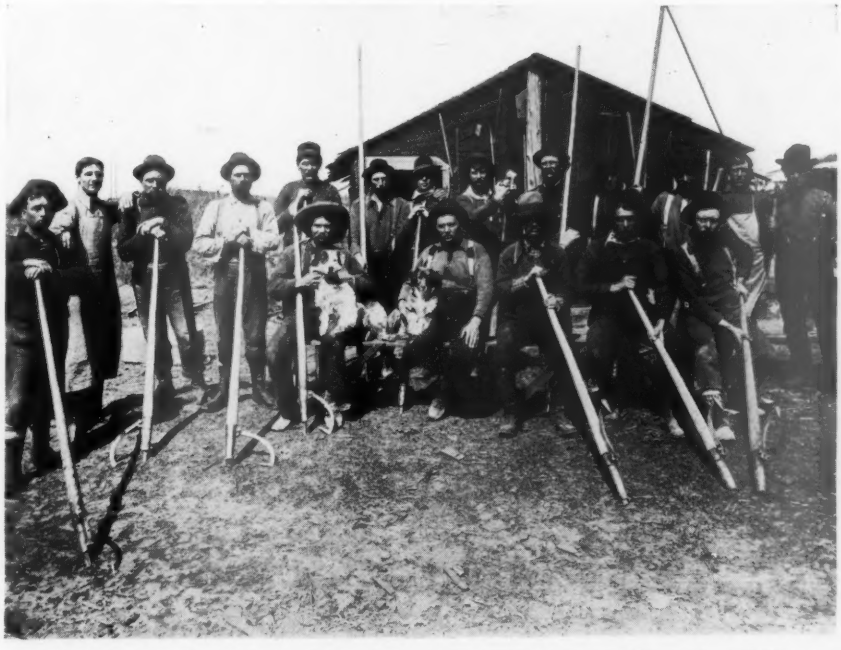
The husky "lumber-jacks" slept in the bunk-house at the left; bought their socks, tobacco and other needfuls at the office store in front—known in their parlance as the "wanigan," and ate in the cook-house behind them when the cook, shown in the foreground, sounded the big dinner-horn he holds to call the men to meals.

skidders, sawyers, top-loaders, or teamsters, but a good man could do all these things and more. The natural adaptability of the woodsman was marked, and he did not have to send for school-taught engineers to build his roads and grades, his bridges and dams.

Lumber camps were either "chinwiskered," meaning small or of little account, or "big" as signified by the appellation. The term applied to the smaller camps was first used to designate the bearded, rancher-jobber who generally operated with mean facilities. The camps approved in lumberjack parlance as big were built to accomodate large crews and might employ from fifty to a hundred men. Even the approved camps were often constructed of logs, hewn to some smoothness on two sides for laying, and sometimes mortised at the ends for stability. All had good ventilation, and it was a vigorous man indeed who did not shiver at his morning dressing. A few of the larger camps were built of whipsawed boards, but many were nondescript, and a camp might have in its construction all the woodman's ingredients of logs, boards, sheet-iron and tarpaper.

The teamsters had an easy time on level roads, but "up-hill" going was just that. "Down-hill" was often infinitely worse, and the teamsters had to exercise consummate skill to pass safely the points of risk on the way to the river landings.

Men enlisted for a new location would divide into building and logging crews. All would eat and sleep in the open until the camps were finished. First at woods work were the timber fitters whose job was to place the felling-kerf on selected trees. This cut took care of about one-fourth of the tree's diameter, and the keen-bladed axes were wielded most often on the side to which the tree inclined and would naturally fall. Sawyers, working from the other side, would finish the cut with a two-man saw. Swampers measured the fallen trunk in log lengths, indicating the cuts to be made, and trimmed the logs of branches to make way for the skidders, who might be snaking the logs by "team-and-tong" to the river's bank, or stacking them in high rollways in the woods, preliminary to a winter sleigh haul to the stream.



The "drivers" had to be on hand at the breaking up of the ice and the coming of the spring freshet in order to get the logs out of the creeks and over the river rapids during high water. Dangerous, hazardous work amid flood-angry saw-logs, at best these stalwart fellows needed courage and daring.

Most of the white pine was cut in twelve, fourteen and sixteen feet lengths, standards of the lower lake yards. The red, or "Norway" pine ran in standards of ten to twenty-four feet, but might be cut in much longer lengths on special orders.

Some of the large pine of selected quality went into square-timber, or "deal," as the London market termed it. The deal timber might be a hundred feet or more in length. It was hewn square by expert broad-axmen, then snaked, big-wheeled, or sleighed to the river. All the logs were marked to indicate ownership.

Important in the logger's operations were the rôles of "road-monkey" and "sprinkleman." The former was responsible for the road being kept in good condition

for hauling. He sanded steep grades to retard descent of sleighs, filled depressions made by slewing runners and covered ground-spots with snow. The sprinkleman made ice roads. His sleigh carried an oblong wooden tank, many gallons in capacity. Judicious sprinkling not only insured smooth hauling for heavy loads but built up guide walls of ice that held the sleighs in road-rut alignment. An error of judgment in relation of the volume of spray to temperature might put the road out of commission for weeks, so the sprinkleman was a camp personage.

Top-leaders and skidders were experts with the canthook. The skidders, utilizing gin-pole, chain-blocks and team, sent the logs up the sides of loading sleighs or woods rollways, where they were deftly grasped by top-loader's hooks and as deftly set in place in the mounting height of timber.

Loading and skidding procedure was reversed when the woods rollways were "broken" for the haul to the river. If the river had open water the logs might be dumped over the bank, helter-skelter. If solid ice prevailed, the logs would be guided in descent and adjusted if gone askew, so that they would form in orderly tiers. Here they would lie, like recumbent ranks of a bivouacked regiment, always impressing the observer with their expectancy of the command to march that would come with the spring freshet.

Deal timber, on account of its special value, was never placed in rollways where it might be marred or broken, but was carefully lowered to open water, usually in the rear of the main drive. Precaution in the care of this material extended to the footwear of the riverman, who must forego his calked boots and resort to buckskin moccasins while driving it down stream.

Most of the deal was destined for some British port, by way of the Welland Canal, though some went down the lake to Buffalo, to be distributed to Atlantic coast yards. Some of the deal was used by ship-builders, as launching skids, or worked into planking and spars.

All was not work in the lumber camp, and the lumberjack was anything but a dull boy. After the evening meal, with its flap-jacks, beans, corned beef and "shoe-pack" pie, the crew would gather on and around the deacon seat, a horseshoe bench that curved around the bunkhouse stove at rear and sides, by tacit understanding reserved for the old-timers. With the second pipe filling the play would start.

The program might be a kangaroo court, a song fest, some hastily improvised skit in buffoonery, or the whole evening might be spent in baiting green hands among the crew. At nine o'clock sharp, the fun would end with the chore-boy's "bunk-time" curfew.

At the docks in the olden days. The lumber carriers included schooner types now obsolete, such as seen at the right. Some took on a million feet or more, and when the hold was filled the lumber was piled high on the docks.

The singers, good, bad and indifferent, introduced a drawling alliteration here and there, and always on the vowel sound of the last word in his lines, thus:

"'Twas earli-i-i one morning, in the month of May-a-a,
Young Jackie came to her, and thus he did say-a-a---
Oh, I'm a bold riverman, as you can see-e-e---
I'm off the white-water of the Miramshee-e-e!"

The *Boston Boy, Young Monroe,* the *Jam on Gerry's Rocks* and *Annie Laurie* were prime favorites. The sentimental songs were rendered with intense feeling, and sobs of singer and listeners might blend as Young Monroe was laid in his grave, or the stern Judge gave the Boston Boy his "twenty-one years" in the "penitencharee-e-e."

Regardless of the quality of performance, at its conclusion every person in proximity to the singer must exclaim, "good song, well sung!" Failure to extend this ethical compliment meant risk of combat with the vocalist at some future meeting in town.

One plot for baiting the green hand, with its properties always available, was known in camp parlance as the "white-owl wing-jam."

The white-owl was discussed by the actors as though it were a specimen of unwonted fierceness, "more savage than a wolf," captured that day by the brave activities of two old-timers. It was supposed to be captive under an inverted washtub, from which protruded a heavy logging chain. The atmosphere for the prank was provided by complimentary remarks anent the manly daring of the one who was to be duped, with stress on the owl's strength and ferocity that must not be (*Continuing on page* 184)

Conservation Leaders In The New Cabinet

THE two members of President Roosevelt's Cabinet who will have most to do with conservation and to whom the nation looks for leadership in that field are the Secretary of Agriculture and the Secretary of the Interior. The President has selected for those positions two men who stand out clearly as conservationists of the progressive school—Henry A. Wallace of Iowa as Secretary of Agriculture and Harold L. Ickes of Illinois.

As Secretary of Agriculture Mr. Wallace will be the directing head of the many lines of conservation work entrusted to that Department, including the Forest Service, the Biological Survey, the Bureau of Plant Industry, the Bureaus of Soils and Entomology, and the Bureau of Agricultural Economics. To the diversity of conservation work represented by these bureaus Mr. Wallace will undoubtedly bring a background of conservation thought and aggressiveness inherited from his distinguished father, the late Henry C. Wallace, who was Secretary of Agriculture under President Harding.

HENRY A. WALLACE
Secretary of Agriculture

The new Secretary has not held public office before and his record as a conservationist is, therefore, not written on the public records. Quiet and unostentatious like his father, he has not hesitated, however, to give clear expression to his views on many major conservation questions. This he has done as editor of "Wallace's Farmer" and as co-author with his father of the book "Our Debt and Duty to the Farmer." It is here one gets an insight to his conservation views.

"Conservation of the nation's resources," he wrote in the book referred to, "should be part and parcel of our agricultural policy. In the course of our rapid economic development we have destroyed our forests and robbed our soils. Whatever justification there may have been in the past for the exploitation of forests and soils, there can now be no question as to the need of restoring and conserving them. A policy of reforestation should be generally adopted both for government and private forests. Marginal lands of relatively low value for farming purposes should be planted to forests, where conditions are favorable. And, on the other hand, farming methods that restore and maintain the productiveness of our farms should be universally followed."

In the same book he commented on the administration of the Public Domain as follows:

"The unregulated use of the public domain as a grazing common has in itself been a cause of many of the economic difficulties suffered by the semiarid West. Our experience with this problem now points to the conclusion that it would be wise to extend to the lands of the public domain the efficient methods of regulated grazing now used on the forest reserves."

Writing editorially in "Wallace's Farmer," he declared only last June in respect to the problem of erosion:

"Erosion is gradually getting more and more attention, especially among the older farmers who, year after year, have seen rains carry away the best soil in their fields and leave behind a network of gullies and yawning ditches. Of course, there is a lot more to wise erosion control than terracing and dam building. We must also consider proper cropping systems and reforestation of the poorer sections."

Mr. Wallace represents the third generation of Wallaces who have been leaders in agriculture. He is young, clear spoken and a close student of economics. He was very close to his father and spent much time assisting him in carrying the burdens of the Secretary's office. Those who know him predict that his administration as Secretary of Agriculture will be based upon the ideas and principles of his distinguished father whose determined and successful fight to prevent the transfer of the National Forests from the Department of Agriculture and the breaking down of the conservation program in Alaska are outstanding examples of his conservation service to the nation.

HAROLD L. ICKES
Secretary of the Interior

The new Secretary of the Interior is a conservationist of the old school of Theodore Roosevelt and Gifford Pinchot. In speaking of him recently Mr. Pinchot said, "I don't think a better selection would have been possible. Harold Ickes is in the heartiest sympathy with the Roosevelt conservation policy from end to end." A man in the late 50's, he has been interested and active in the public espousal of conservation for the past twenty-five years. He was one of the old conservation group headed by Walter Fisher and John F. Bass who established "The National Conservation League" in 1908, immediately following President Roosevelt's White House Conference of Governors. In this group also were former Congressman William Kent, Samuel Adams, former Assistant Secretary of the Interior and Gustav Myers. In the light of present-day conditions and thought, it is interesting to note some of the principles upon which these men united:

"We do hereby declare the conviction that the great prosperity of our country rests upon the abundant resources of the land chosen by our forefathers for their homes and where they laid the foundation of this great nation.

"We look upon these resources as a heritage to be made use of in establishing and promoting the comfort, prosperity, and happiness of the American (*Continuing on page* 192)

TRAILS OF THE WILD

TRIP NUMBER TWO--THE SUN RIVER WILDERNESS OF MONTANA, UNCHANGED SINCE THE BLACKFEET HELD THEIR PICTURESQUE SUN DANCES, WILL BE EXPLORED BY THE "TRAIL RIDERS OF THE NATIONAL FORESTS" IN AUGUST

"THE WILD IS CALLING"- - COME AND TAKE THE TRAIL WITH THE AMERICAN FORESTRY ASSOCIATION!

THE Piegan tribe of the Blackfeet Indians called it Medicine River, and held its ceremonial sun dances of worship along its banks. Today the white man calls it Sun River and leaves it closeted with nature in a wilderness of mountains that spread for endless miles.

Backed up by the great Shining Mountains, so named in 1743 by the poetic French explorers Pierre and Chevalier de La Verendrye, who first saw their peaks scintillating in the distance, the historic Sun River lends its name to the Wilderness which The American Forestry Association's "Trail Riders of the National Forest" will explore in August. Within this untamed area, a portion of the Montana Rocky Mountains, and included in the Lewis and Clark National Forest, lies the mysterious and picturesque Chinese Wall; and the Sun River herd of elk, 9,500 strong, roam the range once grazed by countless thousands of bison, as wild and as free as in the days they reigned in the lower country.

Unlike the Flathead Wilderness which will be explored by the Trail Riders in July, the Sun River region has few bold, glaciated peaks. Its mountains are more worn with longer, more gradual slopes, approached by gently billowing valleys. Yet what it lacks in rugged beauty, it makes up in color and grandeur. Fields of bear grass in bloom —one of the most mysterious and beautiful of the mountain flowers; luxuriant grassy meadows, aptly called mountain parks; great forests of giant pines, with rushing streams, rich in trout, singing at their roots; great untimbered canyons, hidden away so securely that their finding instils one with the sense of discovery; and wild life in primitive glory —deer and elk, nimble mountain goats, black bears, mink and otter.

It is a country without a road and, like the Flathead Wilderness, is reached only on foot or with pack and saddle horses. It snuggles up close to the main range of the Rockies—the backbone of the continent—extending for miles along the eastern side of the Great Divide. Opposite, at some distance, the summits of the Big Belt Range stand against the horizon, one of Montana's most beautiful mountains.

The history of the country is one of vibrant color. It is the country of Sieur de La Verendrye, the famous French explorer who succeeded in planting the tricolor far into the unexplored Northwest, and of his two sons, Pierre and Chevalier. It is the country of Lewis and Clark, who viewed it for the first time in 1805 from the junction of the Sun and Missouri Rivers. It is the battleground of the Blackfeet and the Crows, whose blood mingled freely with the waters of the Sun in the day of their reign.

Along the south fork of the river, the Trail Riders will cover the same trail that was feverishly traversed by gold seekers in the great Sun River stampede shortly after the Civil War when false word of a "strike" spread through Last Chance Gulch and other camps to the south.

History, tradition and romance! Perhaps no other region of wild country holds more! Along the wilderness trails members of this second expedition of the "Trail Riders of the National Forests" will see the old Indian burial ground and trading post at Wolfe Creek; they will cross the plains where Merriweather Clark and his intrepid explorers counted more than 10,000 bison in one herd in 1806, homeward bound from the Pacific. And somewhere in this broad land of the south fork is treasure—ancient treasure, buried, so the story goes, by Henry Plummer, road agent, desperado and robber in the days before the Vigilantes rode for such as he.

Elevations range from 5,000 feet to 8,000 feet—from valley floors to the roof of the world where the riders will enjoy a panorama of stupendous magnitude, almost cathedral-like in its silence, immobile save for dancing sun paths on the Sun River.

Five days of untouched beauty—a country colored by green forests, brilliant and rare flowers, softly-mounded mountains, dancing waters—and enriched by the drama of history and legend. This is the Eden that lures the Trail Riders in August.

That the remnants of the great American wilderness might be enjoyed by outdoor loving people, The American Forestry Association has organized the "Trail Riders of the National Forests." National in scope, the new unit presents for the first time opportunity for public exploration, under organized leadership, of untamed country—real primitive areas unchanged through the centuries.

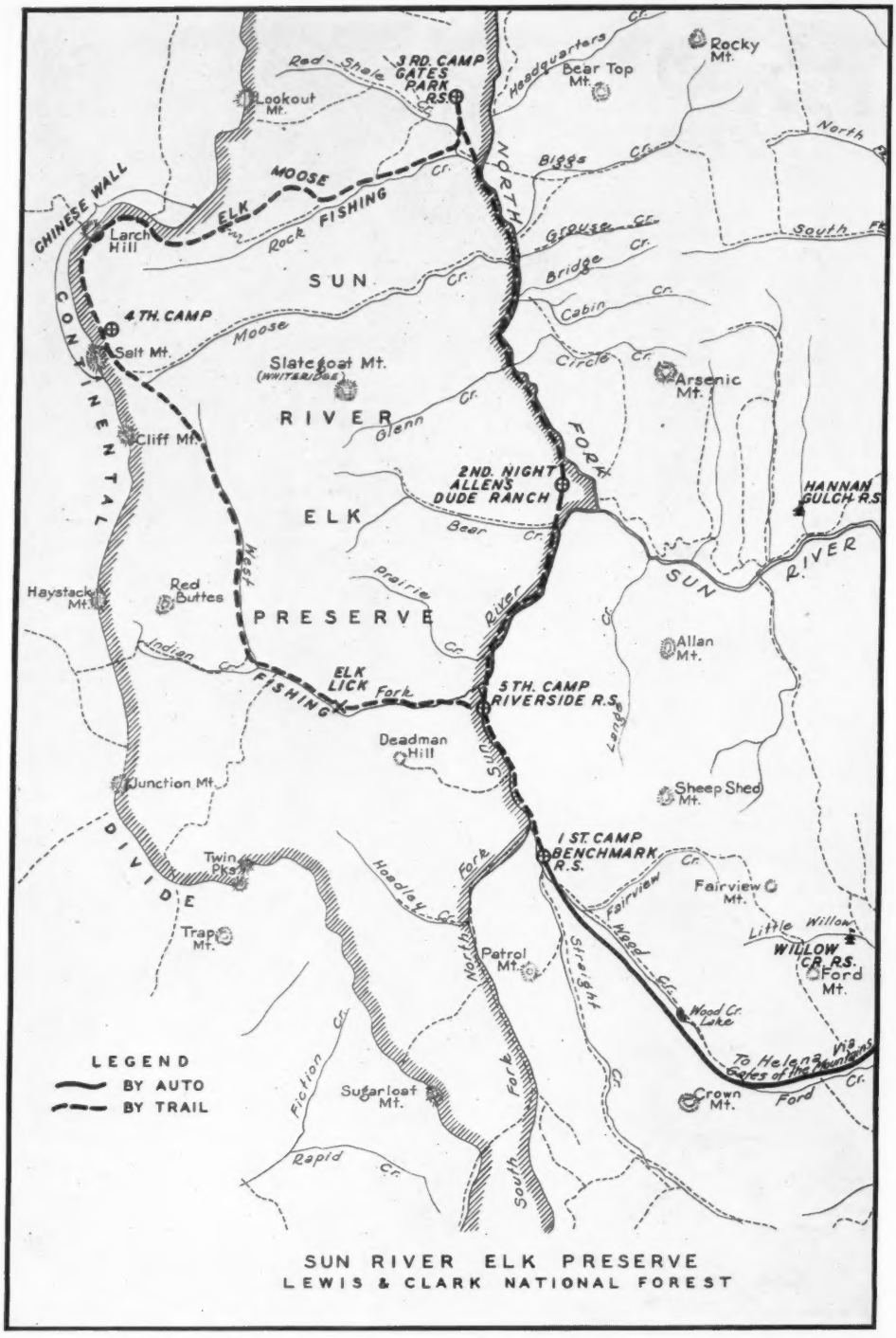
Two exploration trips are planned for the summer of 1933—the first, from July 10 to July 16, will be into the South Fork Wilderness of the Flathead National Forest, in Montana, one of the greatest primitive areas in the United States. A description of this trip appeared in the March issue of AMERICAN FORESTS.

The second trip, described here, will be into the Sun River Wilderness of the Lewis and Clark National Forest, in Montana. The riders will enter the area on August 16 and leave it August 22. The cost of this trip, including all expenses for the five days—from Helena back to Helena—with the exception of bed rolls, will amount to $54.75—less than $11 a day. The cost of the Flathead trip is $43.75, a little more than $7 a day.

The trips will be made under the direction of The American Forestry Association, with the cooperation of the United States Forest Service and the Northern Pacific Railroad. Forest Rangers will ride with both parties, while expert wranglers, guides and packers will serve every need of the trail.

So plan to ride with the "Trail Riders of the National Forests." Map and itinerary on page 158. Upon request, the Editor will give you full details.

Above, the Chinese Wall in the Sun River Wilderness. Below, in the heart of the wilderness stronghold—fields of wild flowers in bloom, luxuriant grassy mountain parks, great forests of pines, fir and spruce, and wild life in primitive glory.



SUN RIVER ELK PRESERVE
LEWIS & CLARK NATIONAL FOREST

TRIP NO. 2—INTO THE SUN RIVER WILDERNESS, LEWIS AND CLARK NATIONAL FOREST

August 16—Helena to Benchmark by Automobile. 120 Miles.
Via "Gates of the Rocky Mountains" to Augusta. Camp at Benchmark on South Fork Sun River.

August 17—South Fork to Allan Ranch. 12 Miles.
A leisurely ride with fishing; elk lick at West Fork; dinner, bed and breakfast at attractive dude ranch.

August 18—Allan's Ranch.
Resting, swimming in warm springs, boating and fishing.

August 19—Allan's Ranch to Gates Park Ranger Station. 16 Miles.
Delightful saddle trip through green timber and broad meadows.

August 20—Gates Park to Salt Mountain, via Chinese Wall. 20 Miles.
Country abounding with elk, and with excellent chances for glimpses of moose, mountain goats and bear. Camp under Continental Divide at 7,500 feet.

August 21—Salt Mountain to Riverside. 20 Miles.
Down West Fork of Sun River. Camp at junction with South Fork. Good Fishing.

August 22—Riverside Back to Benchmark. 7 miles.
The only "double back" on the entire trip by trail.

August 23—Benchmark to Helena, by Automobile. 120 Miles.
"Good-by" to trail. Arrive in Helena in time for train connections.

TREE PLANTING AIDS UNEMPLOYED

New York's Reforestation Program Takes a Long Look Into the Future While Providing Immediate Needed Relief

By JOHN T. GIBBS
Secretary of the Conservation Department, State of New York

DURING his campaign for the Presidency, Franklin D. Roosevelt said that the practice of reforestation on a national scale could readily be made an important factor in relieving unemployment. He cited as proof the experience of the State of New York.

Naturally Mr. Roosevelt's statement excited a great deal of discussion and interest and turned the public spotlight on the forestry work of the Empire State. What, people asked, is New York doing in the matter of tree planting? And, most important, to what degree has this work relieved unemployment? To answer the last question first, New York gave employment to 10,347 men in its reforestation work during 1932. They received wages aggregating $198,122. In addition more than two thousand men were put to work on forest improvement—constructing fire lines, thinning and pruning operations, and the eradication of gipsy moth. More than 500 families were benefited by $20,000 expended for pine and spruce seed cones. If work in the State Parks is included, the total number of unemployed aided by the forests of New York in 1932 exceeded 25,000.

In order that the largest measure of unemployment aid be given in the reforestation work, Conservation Commissioner Henry Morgenthau, Jr., with the approval of Mr. Roosevelt, then governor, directed that all men especially engaged in this work should be selected from unemployment relief lists in the counties in which the planting was to be done. These lists were provided by the Temporary Emergency Relief Administration, which had been set up late in 1931.

This was immediate relief to thousands of needy families. But the New York reforestation program, together with forest improvement work, is drawn up to extend relief over a term of years—perhaps until an industry is revived that will give employment far into the future.

Originally, it was the abandonment of lumbering villages and the danger to water sources which prompted the forest policy of the State. Like all the states along the Atlantic Coast, New York was in the beginning heavily forested. But white settlers cleared the land for agriculture and the lumbermen hewed and cut with little

New York State will spend $20,000,000 to reforest 1,000,000 acres of abandoned or marginal farm land, of the type pictured above, by 1944. Last year this work gave employment to more than 10,000 needy men. Woodland and park improvement in the State gave work to 15,000 more. Below, a crew setting out young trees. These men were selected from unemployment relief lists.

As a result of the Reforestation Program in New York, in which immediate aid has been given thousands of jobless men, many farmers are planting their marginal lands to forests of the future. Here trees are being distributed to members of the 4-H Clubs for planting on their parents' farms.

regard for the future. So when good timber trees vanished and the lumbering villages were deserted the State, with an idea of preserving what was left of the forests, established the Forest Preserve, embracing two great areas, one in the Adirondack Mountains and the other in the Catskills. This was a generation ago. Today the aggregate area of the Preserve totals 2,300,000 acres of mountainous, heavily timbered country.

By constitutional provision, all lumbering operations are forbidden within the Preserve. Not a single tree may be cut except for purposes of protecting the area from fire, insects, and diseases.

Entirely aside from its work in the Forest Preserve, the State is now engaged in a forestry task to which President Roosevelt particularly referred when he spoke of relieving unemployment. This is the reforestation program. After considerable study of the State's need for more timber outside of the Preserve and of the problem which had arisen as a result of wholesale abandonment of farm lands, a Reforestation Commission recommended to the State Legislature in 1930 that 1,000,000 acres of abandoned or marginal farm land be purchased by the State and planted to forests. The cost was set at $20,000,000.

As governor, Mr. Roosevelt approved this plan, which was entirely nonpartisan in its inception and support. So in 1930 an original appropriation of $400,000 was made, followed in 1931 by $600,000. By that time two Legislatures had had opportunity of passing upon and submitting to the voters a Constitutional Amendment, making it mandatory for the Legislature to appropriate the remaining $19,000,000 over a period of eleven years. The program would therefore be completed by 1944.

The voters of the State approved this Amendment and the Legislature immediately appropriated the first $1,000,000 under its provision, available for reforestation work in 1932. Work began immediately. In fact, by the time the Amendment was adopted more than 40,000 acres had been acquired. By the end of 1932 this figure had reached 200,000 acres.

The planting program for 1932 was at first placed at 20,000 acres. But about 7,000 acres more had been prepared for planting, the necessary number of trees were in the nurseries, and no reason presented itself for not going

How the areas being planted by the unemployed will appear twelve years from now. In the years to come these forests will be used to provide wood and revenue to the State—perhaps reviving an industry which will give employment far into the future.

ahead. As a result 27,000 acres of land were planted to trees—22,000,000 of them.

It was on this project that the unemployed got their chance to earn money again. In the early spring the 10,347 men were brought into the forests. Their task was to dig up the seedlings and transplants at the nursery, bundle them for shipment, and then plant them at designated areas. All of the men were from the rural counties and smaller cities. But this was by no means all of the extra work afforded by forestry in New York during 1932. Once the various reforestation areas had been planted it was necessary to protect them and place them in condition favorable to the later growth of the young trees. First came the construction of fire lanes. Around each planted plot of approximately fifty acres a lane four furrows wide was plowed. Later all of these lanes were harrowed, so as to make sure that, if a forest fire should break out in one plot, it would be almost impossible for the blaze to move to any adjoining plot.

This work was done chiefly with the funds of the State Conservation Department and money provided by the Emergency Relief Administration. Several hundred men were given employment. In addition to plowing fire lanes, unemployment relief funds gave more jobs to men who cleared away deadwood and weeds, pulled up bushes which acted as hosts to the germs of tree diseases and, in general, made the areas safe for the growth of the new tree crop.

Then there came another forestry activity in which the State was able to offer considerable relief for the jobless. For ten years New York had been carrying on a battle to prevent the invasion of its forests by the gipsy moth. This insect had caused great damage in New England and was marching westward at the rate of about six miles a year. In 1923 it reached the New York border. To prevent its further progress, a "barrier zone" was set up east of the Hudson River and extensive eradication methods practiced within it. During almost a decade this year-to-year battle had been waged with considerable success. Only in rare instances did the moth colonies spread to the westward. But the battle was won each year only to be fought all over again the succeeding year when new swarms descended upon the zone from the infested New England regions.

It was a matter largely of eradicating egg clusters in the fall and winter, although there was considerable spring and summer spraying of infected trees. Barely sufficient funds were provided by the State each year to engage enough men to carry on this work so that each year's conflict was won by a narrow margin.

When the Temporary Emergency Relief Administration was set up in 1931, with $20,000,000 to spend, $1,000,000 of which was allotted for labor on State projects which might afford the largest measure of unemployment relief, it was considered proper that a portion of this sum should be devoted to gipsy moth work. Consequently, $80,000 was allocated to the Conservation Department and about 900 men were given jobs at various times during the winter. Thus 23,000 man-days of labor were given to those who otherwise would have been unemployed.

President Roosevelt, while Governor of the Empire State, with a party of New York foresters, inspecting the areas reforested by men from the ranks of the unemployed.

The result was a definite advance in the campaign against the pest. The barrier zone was never as free from infected areas as it was during the summer of 1932. The work, however, did not end here. In the fall of 1932 the Relief Administration allocated $68,500 for a continuance of the work and during the past winter about 400 extra men were regularly on the payrolls engaged in egg cluster destruction.

The practice of forestry has made still another contribution to unemployment relief in New York. More than 500 families in the Adirondack Mountain counties earned much needed extra money gathering pine and spruce cones for the Conservation Department, which needs an unusually large number of forest tree seeds for its reforestation program. Last year the State's trees produced an unusually abundant crop, and word was sent to the nearby neighborhoods that the department was willing to pay fifty cents a bushel for white pine cones, which are easily gathered after falling, and $1.75 a bushel for red pine and spruce cones, which must be picked from the trees.

Some families went out as units into the forests and gathered hundreds of bushels of cones. (*Continuing on page* 173)

Ben East

The author spies on the nest of the king of birds—the eagle's aerie—cradled high in the branches of a lofty wilderness tree.

THE HOMES OF BIRDS

By BEN EAST

MEN build their homes of wood and brick and tile and many other materials, lining them with plaster, carpeting the floors with soft rugs, brightening the walls with gay colors and adding a roof to keep out the sun and rain.

Yet for all their craft men scarcely outrank the birds in the art of home building, and there are few materials in the houses of men that do not find their way also into the nests of birds.

For birds, too, build with wood, both by laying up sturdy, interwoven platforms of twigs and branches and by carving out for themselves snug hollows in tree and post.

And what are brick and tile but clay, hardened by heat? A material that goes into the nest of every mother robin, to be baked by the sun so hard that the rains of one autumn and the snows of one winter are not enough to break down the masonry of the walls.

As for the art of the plasterer,—the chimney swift knows it well. He glues together the twigs of his shallow nest with his own saliva, and cements the entire structure against the side of a convenient chimney in the same fashion.

Soft rugs? The mother woodcock, brooding in a shallow hollow on the forest floor, lines her nest with soft dry leaves. The woodpecker leaves a litter of fine dry chips, soft as sawdust, at the bottom of the cozy hollow she chisels out for herself. The wild duck plucks from her own breast eider to grace a king's robe, and cushions her nest with it so generously that when she leaves her eggs she mantles them with this same soft coverlet, against the chill of northern winds and the sharp eyes of prowling foes.

The mother hawk brightens the walls of her nest by gathering green leaves and the flowers of maple and other trees, strewing them over the platform of dead branches long after her work of building is finished, and even after her fledglings are hatched.

A roof? Have you ever found the nest of a mother rail, hidden beneath a neatly woven canopy of marshland grasses, drawn together to shield her from weather and unfriendly eyes? Or have you seen the closed rain-proof nest of the marsh wren, with a floor of cattail down and a door lintel of the same soft stuff, a cozy house woven of rushes becauses there are no trees in the marshes to furnish caverns ready-made?

Carpenters, masons, weavers and burrowers, these

Ben East

Bald eagle youngsters, gravely discussing their evening meal.

The mother rail sneaks back to her nest in the marshes — caution and protective fear in every feather!

feathered folk, workers in wood and clay, in thistledown and spider web, in moss and straw, in wool and hair, in grass and bark and even in their own feathers, and they do their work well. Not even cloth and paper are outside the ken of their building, and scraps of both are likely to find their way into the nest of martin and robin, or even of hawk and crow.

A. A. Allen

And did you say "roof"? This neatly woven canopy of marshland grasses is the work of the Virginia rail and serves to shield her intimate family life from both weather and unfriendly eyes.

The eagle is king of birds and he builds a nest fit for a monarch. The golden eagle, dweller on craggy mountain cliffs with a floor of solid rock beneath the walls of his home, is not so careful a builder, but the nest of the bald eagle—he who graces America's coins and the standard of her flag—is a great bulky platform, cradled in the high branches of a lofty wilderness tree, often so wide and solidly fashioned that a grown man can curl down upon it and lie as on a couch.

The eagles return to the same nesting place year after year, repairing the aerie, adding each spring a fresh layer of dead branches — many of them as thick as a man's wrist and three to five feet long — until the nest bulks to the height of a man and is as wide across the top as it is high. On top of the platform is a shallow, saucer-like hollow, lined usually with a thick pad of soft dry grass, but sometimes with material as coarse as cornstalks and clods of green turf. Here the mother eagle lays her large white eggs, usually two in number, and here she broods, with her snowy white head raised above the rim of the nest where her piercing yellow eyes, under their beetling brows, can search the aisles of the neighboring forest for intruders.

It is a far cry from the great stalwartly woven aerie of the eagle to the delicate nest of the ruby-throated hummingbird, jeweled midget of the feathered kingdom. The ruby-throat builds a tiny nest, deeply hollowed, perching it on a branch in such a way as to simulate a grayish, lichen-covered knot. And to carry out this mimicry more perfectly it is actually covered with lichens gathered from the trunks and branches of trees. More remarkable still, these are tied in place with strands of spider web, wound around and around until each scale of lichen is secure. An artisan indeed, the tiny bird of the jeweled throat, to work with threads so frail!

In the matter of building a delicate nest the goldfinch also deserves honorable mention. The lining of his nest is literally as soft as thistledown, for that is exactly the material he uses. He even waits until summer is past the zenith and early goldenrod blooming along the roadsides before beginning housekeeping, for not until then can thistledown be had. Small wonder this little golden chap is often called the thistle-bird. The oriole is the master weaver of all the feathered clan. His nest is a deep hammock, hanging many inches below the branch that supports it, swinging in every passing wind. He weaves it of grass, of bits of string, of horsehair, of the long fibers of goldenrod and other plants, catching a strand of fiber at the upper end and letting himself fall to the ground to strip it down the stalk.

There is peril in working with materials so strong and difficult to manage, however, and sometimes the oriole tangles neck or wing or foot in a loop of his own weaving hopelessly enmeshing himself in his desperate struggles and at last, unable to

Ben East

The mother wood-cock is well hidden at her brooding, in her nest lined with soft, dry leaves in a shallow hollow in the forest floor.

extricate himself, is left hanging by the nest, dead. a sorry martyr to his own craft and the excellence of his work.

The barn swallow has a nesting habit both strange and interesting. This fork-tailed master of flight makes scant use of grass or straw in the building of his nest, constructing it for the most part of pellets of mud cemented together with saliva. He does line it with straw or grass, however, and inside that he carefully arranges a second softer lining of feathers. Not his own, but small ones he gathers from the nearby farmyard — and invariably he chooses white ones if he can get them.

You will find it no easy task to spy inside his nest for he tucks it away against the side of rafter or beam, usually so close under roof or eave that there is no head room above it. But if you would see how he builds it and would study the intricate tracery of brown or purple on the white eggs, if you hold a hand mirror above the nest, the last of the swallow's secrets will be disclosed. You may even photograph the nest by directing a shaft of light on to this mirror with a second one, held out in the sun, training your camera on the lighted reflection.

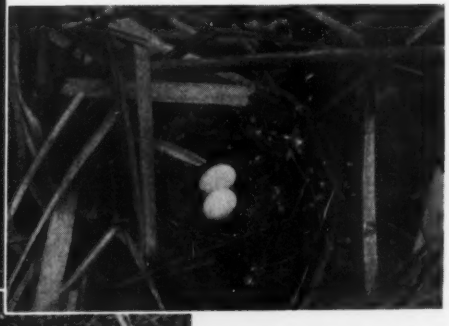
Another of the swallow clan, the bank swallow, hides its nest even more effectively. So effectively, in fact, that neither eye nor lens can spy upon it except at the price of de-

A. A. Allen

A charming glimpse of grebe family life. From the bulky, round mound of moss and rushes that is the floating nest of the grebe, the newly hatched young adventurously takes his first swimming lesson, under the watchful eye of his mother.

A. A. Allen

The whip-poor-will builds no nest whatever. The eggs are laid unconcernedly on the leaves on the forest floor, where the mother's soft brown plumage blends with the colors about her.



A. A. Allen

The mourning dove, though an ardent lover, is not domestic-minded. He is notably careless in providing a home and nest for his mate and her invariable two white eggs.

Ben East

Center, above—The tiny, perfectly built nest of the ruby-throated humming-bird, jeweled midget of the bird kingdom. Below—The killdeer builds her unlined nest in the open fields, a few pebbles, bits of dry wood and weeds for flooring. This picture of a brooding mother was made with the aid of a long string, attached to the shutter of the camera, which was set up almost over the nest.

A. A. Allen

Duty-bound, this Florida gallinule or water chicken is anxiously regarding the eggs in her nest in the cat-tails. There are few more charming sights in the jungles of the marsh than a nest of young gallinules hatching. As they emerge from the egg, the tiny stilt-legged chicks clamber over into the water almost immediately to float like little animated corks.

"Whose coal black baby are *you*?"

stroying it. The bank swallow excavates a burrow for himself in the vertical side of a steep bank, most often along the border of river or lake. Usually the burrow bends to right or left, always the nest is far enough from the entrance that the brooding mother is safe from intrusion. The nest itself is usually built of grasses, leaves and feathers, although sometimes the eggs are laid on the bare sand.

Nor is the bank swallow the only bird to tunnel out a snug cave. The kingfisher follows the same custom, excavating a burrow several feet long and laying its eggs on a queer nest lining of fish scales, bones, crawfish shells and like refuse from the bird's dining table.

Equally strange is the cushion on which the white round eggs of the mother barn owl repose. This owl bolts its food whole or in large gulps, swallowing fur, bones and all. Later the fur and bones are disgorged in the form of bulky pellets and the owl's nest may be lined to a depth of several inches with this strange material. And what would you say to a shed snake skin as adornment for a nest? That is the ornament chosen by the crested fly-catcher and seldom is a nest of this bird found but that at least a short piece of cast snake skin has gone into its building. Whether this is a ruse of the fly-catcher to fill with fear the hearts of intruding foes, no one can say. It seems strange that the mourning dove, ardent, soft-voiced lover of the spring thickets, should build one of the most slovenly of bird nests. One would expect better things of so devoted a bird. Perhaps his courtship so overshadows the more serious matters of life, however, that he lacks time for domestic affairs.

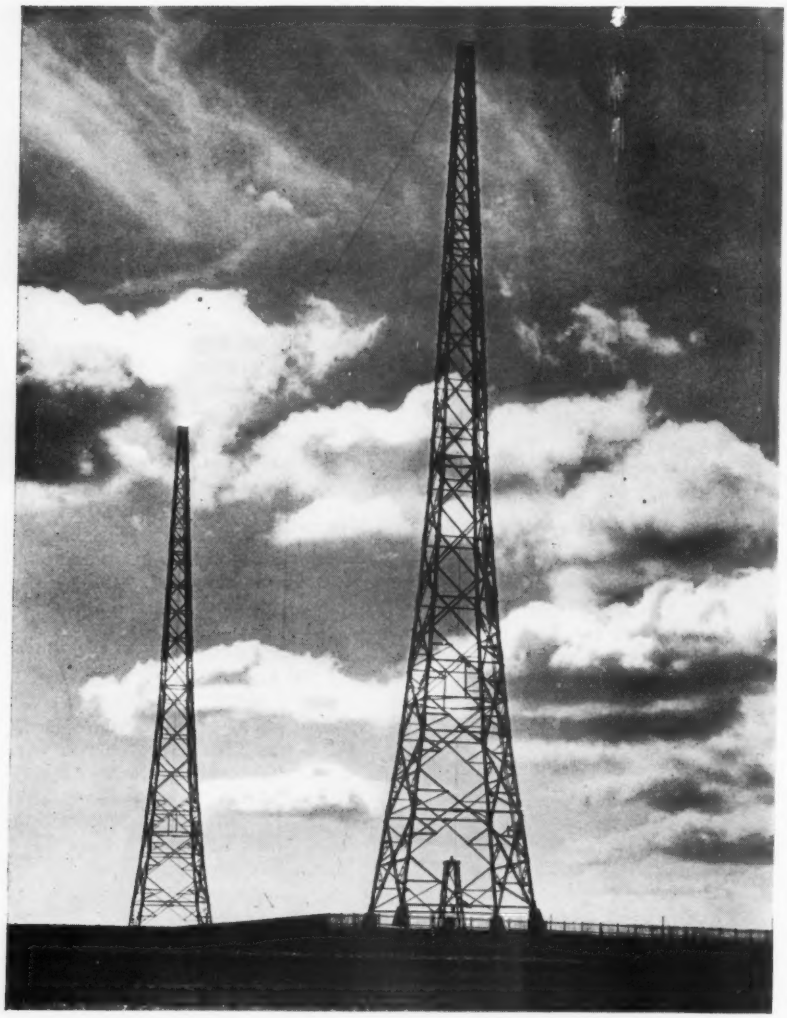
At any rate his nest is a flimsy flat platform of twigs, without a lining of any kind, perched on a stump or in a low tree crotch, and so thin and ill shaped that it barely holds the two white eggs entrusted to it.

Of the water birds many nest on rafts, platforms woven of dry rushes, floating in water often several feet deep and anchored to green reeds to keep them from drifting away with wind or current. Both the coot and gallinule build such a nest, weaving it carefully in the form of a bulky, deeply hollowed basket, raised high enough above the water that the eggs at the bottom of the hollow are always dry. There are few sights in the marshland jungles more attractive than a nest of young gallinules hatching. Tiny black chicks, stiltlegged and scarlet crowned, they clamber over the rim of the basket almost as soon as they come from the egg, floating as buoyantly as little black corks. Let an intruder appear and they scatter like chaff, each seeking a hiding place among the tangles of green reeds and other water plants, until the visitor is fortunate to find two or three of the basketful. There is one foe, however, that the baby gallinules do not escape so easily. Great armor-plated snapping turtles, divining by some acute sense of smell or hearing what is transpiring in the hollow of the nest of rushes, lie alongside it like squat ugly submarines, awaiting the chicks as they tumble overside.

Of all the birds that nest on a (*Continuing on page* 185)

Ben East

Night hawks have learned they are safe from almost every foe on the tops of high city buildings, and often lay their eggs on the flat, gravelled roofs. Here are a couple of newly hatched youngsters.



Wood's challenge to American builders! This radio tower, 330 feet high, stands at Muhlacker Station, Stuttgart, Germany. Constructed of pine, its strength lies in small metal gadgets, or connectors, at all joints, a construction method developed by German engineers during the World War. A wooden radio tower 525 feet high is being erected in Germany.

WOOD'S CHALLENGE!

Boon to Forest Values is Promised by Development of New Joint Which Opens Large Field for Utilization of Wood in Structural Building in America

By AXEL H. OXHOLM

A RADIO tower 525 feet high is being erected in Germany. It is built of wood. Not far away, at Stuttgart, one of Europe's most modern railway terminals has been completed. Its great wide span roof is of wood. Over in Vienna a gigantic auditorium with a 196-foot free span has been erected to seat 75,000 people. It, too, is built of wood.

Thus wood, which bowed to the age of steel and concrete, comes back as a structural material to challenge American builders. A small metal gadget, in the form of a ring or a plate or a disk and concealed from the eye when the structure is erected, is responsible for this development.

The idea is new in America but not in Europe. In fact, it was utilized by the famous explorer Amundsen in the construction of a wooden hangar for his dirigible *Norge*, when preparing for his North Pole flight. But to Germany and the World War belongs its conception.

In the early fall of 1918 a long line of German prisoners were unloading lumber near Saint Nazaire on the west coast of France — lumber destined for trenches on the Western Front. It was raining, a cold driving rain. The prisoners were disgruntled and occasionally paused in little groups to criticize and to talk among themselves.

During one of these huddles a bit of conversation caught my ear. "We would have lost the war long ago," one was saying, "if our engineers did not know any more about wood construction than these Yankees."

Here, I thought, might be something worth listening to, and I called the prisoners out of line. One was a master carpenter and the other a budding engineer just out of college. But not until after the Armistice did the prisoners talk somewhat freely. Germany, I learned, closed in on all sides from the rest of the world, had been forced to adopt extraordinary measures to conserve her natural resources. Iron and steel had to be used for guns, munitions and railways. For building and construction, therefore, timber from the German forests—in splendid condition throughout the war—had to be relied upon. But the German pine, fir and spruce did not yield construction lumber of primary importance. This meant using oversized timber to overcome the inherent weakness of any construction—namely, the joint. This would waste timber, so a solution had to be found.

The German engineers stepped in at this juncture and developed connectors in the form of metal rings, fitted into grooves in the two wooden members to be joined, and held together with the customary bolt. In this manner the load was carried by the ring instead of the bolt, thereby increasing, by several times, the strength of the joint. Thus it was possible for the German military engineers to build important structures with the woods they had and effect an appreciable

economy in both labor and material. This was the beginning of the European connector system.

Soon after the war other countries followed suit, and in the years that followed Norway, Sweden, Switzerland, Czechoslovakia, Austria and Germany turned out a number of improvements on the original joint. Also, new types made their appearance.

Since 1920 I have contacted in Europe the inventors and construction concerns exploiting these connectors and brought back to the United States more than sixty different types, together with all available data.

How to introduce this system into America was quite another problem. The photographs which I brought back showing radio towers several hundred feet high, an auditorium seating 75,000 people, warehouses with free spans of 256 feet, gigantic bridges, airplane hangars, and even dirigible hangars, did not make much of an impression on American builders.

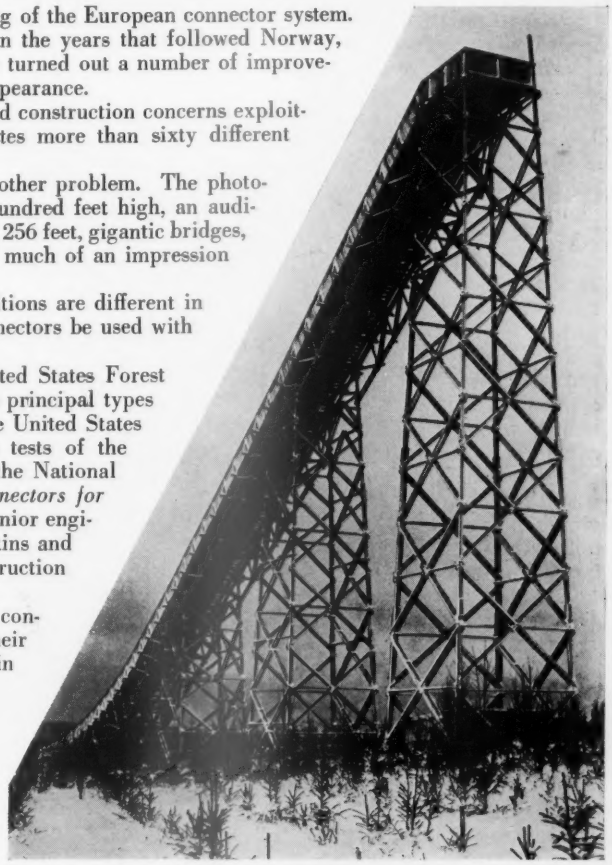
"It is all right in Europe where labor is cheap, but conditions are different in this country," they would say. "Besides, how can these connectors be used with American woods?"

At this point the Forest Products Laboratory of the United States Forest Service, at Madison, Wisconsin, agreed to make tests on the principal types of European connectors, and the Bureau of Standards of the United States Department of Commerce agreed to make metallographic tests of the metals used. The joint report has been released through the National Committee on Wood Utilization under the title *Modern Connectors for Timber Construction.* The authors are George W. Trayer, senior engineer, of the Forest Products Laboratory, and Nelson S. Perkins and Peter Landsem, construction engineer and assistant construction engineer, respectively, of the Committee.

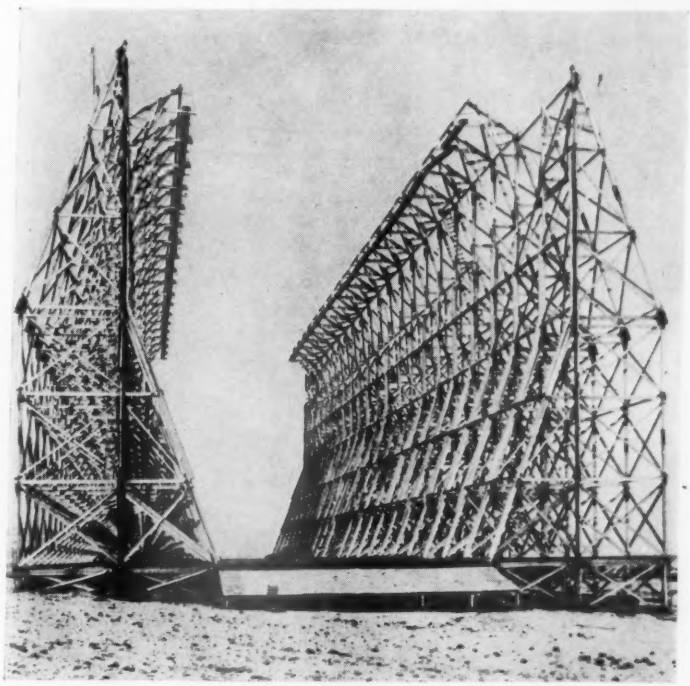
The report brings out many advantages of these modern connectors, recognizing the fact that they have demonstrated their efficiency and economy in hundreds of structures built in Europe during the past fifteen years.

"With modern connectors the strength of a joint is increased," the investigators reported, "thus permitting either a decrease in the gross sectional area of the members, the use of lower grades of the same species, or the use of weaker species, with consequent decrease in cost of material."

When desired, it was brought out, structural units, such as those in oil derricks, may be taken down, moved to a new site, and re-erected, if necessary using simple splices at chords and diagonals.



An interesting picture of Norway's appreciation of wood. Here, in a young forest has been erected a great ski-jump with wood supporting towers framed with modern connectors at all joints.



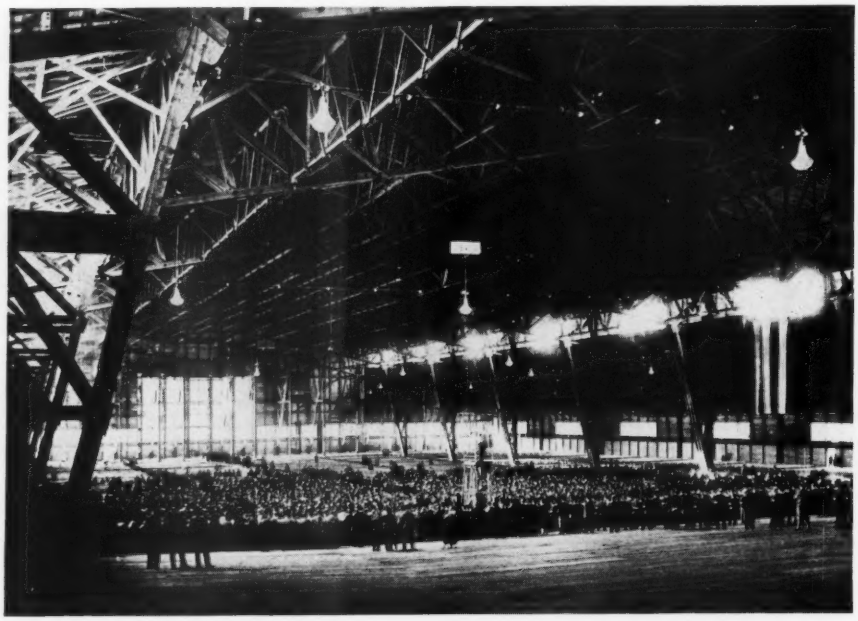
The famous explorer Amundsen knew the secret of gaining greater strength in wood construction. At Spitzbergen, within the Arctic Circle, he constructed a wooden hangar for his dirigible *Norge,* in preparation for his flight over the North Pole. Modern toothed connectors were used.

New types of wood structures, hitherto unattempted in the United States, have been erected in Europe through the medium of the connectors. Wood construction that has somewhat fallen into disuse in the United States because of the pressure of costs stands tangibly prominent in Europe, because of modern connectors, at costs that are amazingly low. Highway and railway bridges are only one field in which the joint connectors should cut costs markedly. Roof trusses and framed arches, grand stands and stadium construction, and nonmagnetic radio and transmission towers are waiting for these connectors, made even more efficient by American designers and builders, to erect them at costs that should often eliminate competition.

The incentive to reduce costs, especially labor costs, is greater in America than in Europe, and for that cause alone American engineers have ample reason to build upon the foundation now ready, waiting fully set, and to develop modern connectors to an even higher degree of excellence and to make them still more suitable for the best American structural woods. Economic conditions have thrown down a challenge, and the

weapons to meet it in wood construction are at hand. In Europe, this construction system has revolutionized previous ideas of the service of wood, and the same result may follow in America.

The development of these connectors and their introduction into the United States will have a profound effect upon forestry conditions. The per capita consumption of lumber has been steadily declining. Granted that the per capita consumption was too high during the early stages of the country's growth, it is today far too low to make forestry prosper. The reason is largely to be found in the development of other materials that will serve in place of wood and are more economical. If there is no market for wood products, then obviously it does not pay the timberland owner to raise additional crops of trees. It is therefore patent that the future of the nation's forests largely depends on the demand for their wood products.



This gigantic auditorium in Vienna, erected to seat 75,000 people, was built of wood through the use of the connector system. It has a 196-foot free span.

This new wood construction system will create a greater demand for wood as a structural material than ever before in the history of lumbering. Not only is it more economical than the old methods, but it permits the prefabrication of wooden structural members in sawmills, thereby eliminating much waste in labor and material on the job. Furthermore, it is possible to subject the prefabricated structural members to chemical treatment, eliminating the danger of exposed surfaces. The treating process of building lumber presents many difficulties at present under the system of recutting the treated material on the job.

Through the elimination of waste at the source, lumber now may be shipped greater distances, and this in turn increases the distribution possibilities. In innumerable instances the less expensive wood construction using connectors will start the wheels of industry rolling. This applies particularly to bridges and other highway construction, airport developments, dock and pier construction and similar structures. In forest operations this connector system has great possibilities in the construction of lookout towers, barracks, culverts and bridges.

A few years ago a steamer was loading structural timber at Tacoma, Washington. This timber was destined for airplane hangars in Germany using this connector system. At the same time a steel hangar was being built in Tacoma—the lumber capital of America—because American lumbermen did not know of this system of construction, which enabled the Germans to pay a premium on imported lumber.

That American industry is awake to the possibilities of this new construction system is indicated by the fact that the National Lumber Manufacturers' Association has already organized an engineering service to put the system into immediate operation. At the same time public interest in the report of the Forest Products Laboratory and the Bureau of Standards is widespread. Engineers, builders, architects, designers and manufacturers, representing about every class of construction in America, have evidenced great interest in these findings. Within a few short weeks following its release demand for the report has exceeded 65,000 in number.

The United States manufactures fifty-two per cent of the world's supply of lumber, and has the choicest structural timber. Wood construction is an established practice, but the technique has made little progress for generations. If one believes the doctrine that use determines value, then the future of the country's forests appears to be much brighter than before. The connector system is a real development toward wider and more efficient utilization of wood.

ANNUAL MEETING TO BE FOREST RALLY

The 58th Annual Meeting of The American Forestry Association will be held in the White Mountains of New Hampshire September 6, 7 and 8. It will be an outdoor meeting, with headquarters at the Forest Hill House, Franconia.

The occasion will be a conservation rally in which seven other organizations will join with the Association. They are: The Society for the Protection of New Hampshire Forests, the Massachusetts and Connecticut Forestry Associations, the Appalachian Mountain Club, the Empire State Forest Products Association, and the New England and New York Sections of the Society of American Foresters.

The three days will be devoted to field trips with evening sessions at the Convention hotel. Like all previous annual meetings, the public is invited to attend.

Reserve these dates now and look for the announcement of details of the program in the May issue.

THE "SPOON-BILL CAT"

By LEE EMMETT YEAGER

THE paddle fish, *Polyodon spathula*, commonly known as "spoon-bill cat," and also as the "shovel" fish, is perhaps the most mysterious fresh water fish in America. Its life history is shrouded in doubt and uncertainty; surprisingly few, aside from certain fishermen, know of its existence.

Naturalists have long been interested in the species and ichthyologists have studied specimens from almost every section of the Mississippi Valley. But little has been found. No man understands exactly what purpose is served by the "spoon," comparatively little is known about its breeding processes, or its feeding habits; and, much to the surprise of some, the so-called "cat" is not a catfish at all.

Yet this veiled, obscure denizen of the inland lakes and rivers yields the finest caviar from its roe, the sweetest tenderloin of the markets and cafes. At the same time it is a staple article of food for a vast number of poorer people in the southern states. No fish gives so much and yet holds a status so secretive and undisclosed. During the past twenty years I have had excellent opportunity to observe the actions and habits of the "spoon-bill." I do not know how many hundreds I have seen, or on how many occasions I have watched their maneuvers in the deep, soft-bottomed lakes. I have watched them at night in the moonlight, at dawn, and in the dusk of afternoon. My efforts at "spoon-bill" fishing have been widely varied in their degrees of success. I recall a few times when I failed to hook a single one, and on other occasions, with one or two companions, I have helped land four hundred pounds or more. And I know of other fishermen who have made much larger catches—and made them by setting bare hooks in open water without bait of any kind.

The paddle fish is represented in the *pisces* by only two species, the Chinese *Psephurus gladius* of the Yang-tse-Kiang River, and the American *Polyodon spathula*. It represents a primitive fish, extremely delicate, without bones, and in adults without teeth. The young have minute teeth, though what becomes of them is difficult to say. When hooked it will surrender after a few feeble jerks and can be landed without a struggle. One man in a boat can easily and safely land a forty pound specimen. The Chinese species is said to be hardier.

Like people, "spoon-bills" of the same age vary in size and weight. Some are slim, others are undeniably stout. Females are especially large and heavy just before spawning. They lay a great quantity of eggs. I have often removed four quarts from a single female, and on at least two occasions, eleven quarts from one specimen. These two fish were large, both measuring over five feet and weighing eighty pounds. A certain Mississippi Delta fisherman once told me that he had removed thirteen quarts of eggs from a single female.

Paddle fish, the boneless, toothless "spoon-bill cat" of the Mississippi Valley fresh waters—though not a catfish at all—is taken without bait and with little effort. This youngster exhibits a morning catch.

This quartet of "spoon-bills" averages ninety pounds each. Little is known of the purpose served by the "spoon" or "shovel" that gives this obscure denizen of inland lakes and rivers a weird appearance.

In my observation males seldom exceed fifty pounds, but they are frequently as much as five feet in length. The largest I ever saw, taken from Tchula Lake, in Holmes County, Mississippi, lacked an inch of being six feet. His bill was thirty-five inches long, and he drew the scales just below the fifty pound mark. The largest "spoon-bill" ever recorded was taken in Lake Manitau, Indiana. It was a female and weighed one hundred and sixty-three pounds. William C. Harris, in his *Fishes of North America*, describes an individual caught in Lake Tippecanoe, In-

diana, that measured "six feet and two inches in total length, four feet in greatest circumference, and weighed one hundred and fifty pounds." By way of contrast, Dr. David Starr Jordan once secured a specimen from the White River, in South Dakota, with a length of four feet and five inches, that weighed only eighteen pounds. Several years ago F. R. Mueller, formerly a wholesale fish dealer in Chicago, who made a specialty of this species, said the average length is three feet and the weight thirty pounds. This is doubtless correct.

The skin of the paddle fish is smooth and scaleless, the tail deeply forked, and the mouth wide, but overhung by the broad, spatulate snout. Both the dorsal and anal fins are posteriorly placed and are of soft rays only. The lateral line is continuous and well developed, but no well developed barbels are present. The nostrils are at the base of the snout and double; the eyes just below and behind. The head with opercular flap is more than half the length of the body, and the base of the tail is partly armed with small rhombic plates. Unlike some fishes, the air-bladder is cellular. The skeleton is of soft cartilage. The color of the fish varies from uniform pale olivaceous to leaden gray.

The quality of paddle fish roe for making caviar is unexcelled. The eggs are greenish-black, about three times the size of shad eggs, and in keeping with the quantity, are exceedingly numerous. The flesh of the fish, similar to that of the sturgeon in both taste and texture, is boneless.

The spawning season comes during the early spring—March and April—in the South and a few weeks later in northern waters. Little is known concerning the places chosen by the fish to deposit their eggs, the type of nest, if any, or of their habits in general at this time. It is believed, however, that they run up stream, swim near the surface, and frequent ponds and lagoons along the lakes and rivers. Doubtless their eggs are laid in the quieter waters of these places.

On moonlight nights just before the spawn I have often watched them play in shallow water or at the surface of deeper areas. Three times during the past year I witnessed them catching water bugs and other insects simply by opening their wide, flexible mouths, rolling over on their sides, and gliding along on top of the water. They are able to make fair speed in this position.

A great many times while fishing in runs or outlets draining lakes I have caught baby "spoon-bills" of less than a foot in length. I found that the best lures were worms and crickets, but I have taken them on minnows and bits of clam. This experience adds weight to the theory that the paddle fish lay their eggs in the quiet waters of ponds and lagoons. It naturally follows that the baby fish would swim down with the current.

Although I have never failed to return baby "spoon-bills" to the water unharmed, I probably should have tapped their little heads and carried them home to the cats and dogs. I have a good reason. I am almost certain that paddle fish, big and little, use their shovel-like bills to dig up the mud bottoms of lakes, ponds and lagoons, thereby muddying the water and destroying beneficial growths of aquatic vegetation. That is why I believe the large hauls sometimes made by fishermen are for the good of the angler and sportsman.

It is certain that "spoon-bills" consume large numbers of aquatic plants and animals—the very smallest forms, of course. But how or where they secure them is another question. Some outdoorsmen believe that they consume worms and grubs as well as tiny fingerlings and spawn of other fishes. I am inclined to agree with this conclusion. An examination of the digestive apparatus of a single paddle fish will convince the investigator that they are incapable of eating anything bulky or solid. In the dozens that I have personally studied I have never found even a semblance of compact material. No fish has a more delicate digestive system or more curiously shaped digestive organs. One part of the stomach, the *pyloric coeca*, is a short, broad, branching, leaf-like organ, dull red in color, and the intestine has a spiral valve.

It is comparatively easy to agree as to what the "spoony" eats, but how does he eat it? In what way does he secure or capture his food? What procedure does he go through or what type of manners does he exhibit in his dining processes? One can readily conclude that he digs with his "shovel"—but there is no proof. Or it may be that he gleans the submerged and decaying logs and branches of algæ and hydræ and other aquatic plants and animals. It could be easily done with his soft, flexible mouth. Possibly he selects some cozy lake bottom, stirs it up to suit his fancy, backs off a few yards to get a good start, and with his great, spreading mouth open wide, rushes through the whirling hoard of aquatic flora and fauna. But most likely less violent methods are employed, and the securing of a meal takes the form of a slow, leisurely hunt—a bunch of algæ here, a moss from a stranded log, a few dozen amœba in a reed-bed, and so on until dessert which may be a water plant of the more succulent type.

Seemingly, the "spoon-bill" prefers lakes to rivers. A deep lake, full of logs, with wooded shores, is ideal "spoony" water. It was in Tchula Lake, in the Mississippi Delta—long, narrow and winding, that I saw the greatest number of paddle fish at one time. The banks are low and wooded, the water deep, and in places the current was choked by logs and tree tops. Better "spoon-bill" water would be hard to find. As I pushed off in the early dawn of a late spring morning I was astonished to see the surface of the water broken every few feet by jumping "spoon-bills." They were breaking water as far as I could see. I quietly oared out from the bank and drifted with the feeble current, marveling at the panorama of fish life before me.

The next hour was one of the most revealing and impressive that I have ever spent in the outdoors. Pale rays of early morning sunlight added color to the scene. The air was pleasantly cool. I drifted along with the fish in awed silence. Often they bumped into the boat. Paddle fish do not jump with the resounding splash of the alligator-gar, but rather with a roll that is completed by a quick snap of the forked tail. This is the movement that sprays the water.

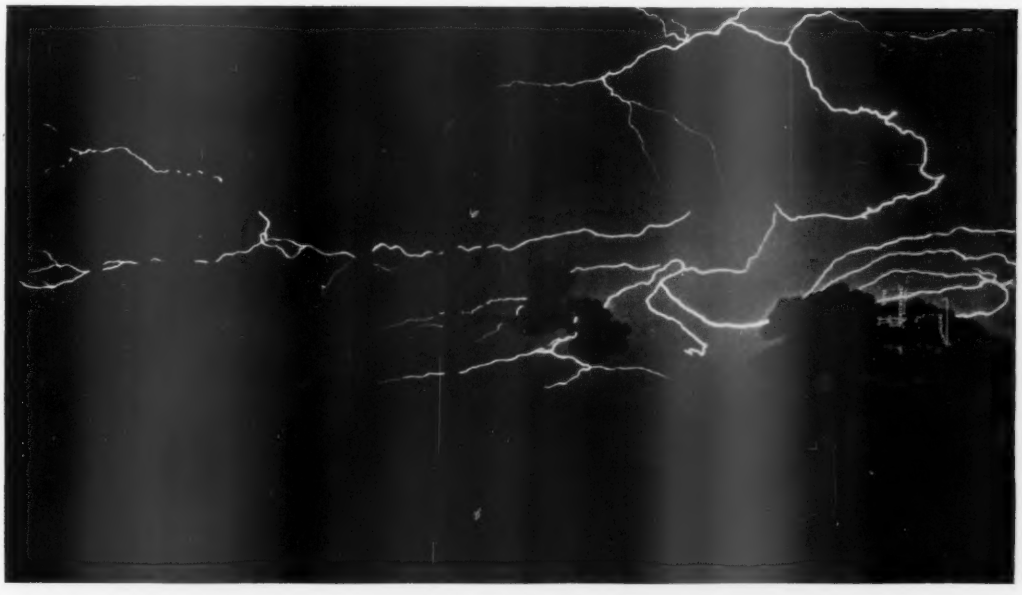
The fish seemed to be headed down stream. Earlier, in March, I had noticed that the general run was up stream. At that time they were, I believe, seeking their spawning grounds, and on the later occasion were returning from the ponds and lagoons to the lake. Or possibly the stage of the water on those respective dates was the cause of the unusual event. I cannot clear the mystery.

I attempted to follow a huge "spoon-bill," evidently a male, nearly six feet long. Slight dips with the proper oar kept the boat behind him as he arose and disappeared some fifty or sixty times within a half mile. He would come to the surface about every fifty feet, thrusting his bill and head out of the water before diving again, which was accompanied by the characteristic snap of his tail. At no time did the big fellow completely clear the water. I finally lost him in the vast number of other fish.

Fishing for "spoon-bills" is devoid of the thrills demanded by the sportsman. However, it is not without glamour. There is excitement in seeing half a hundred "spoons" thrust above the surface of the water; there is fascination in catching a hundred pounds on a few gross of common, unbaited hooks. And there is the intoxication of uncertainty, the piquancy of expectation, and the stimulation of variety, for the seeker of paddle fish sometimes catches the equally destructive sucker, or buffalo and German carp. Even turtles and gar-pikes are sometimes caught, as are the (*Continuing on page* 192)

A Forest Page for Boys and Girls

Conducted by WAKELIN McNEEL



IS IT GOIN' TO RAIN?

THE weather is the most talked about subject in the world, and it deserves its place of popularity. It exerts a powerful influence on the disposition. Days that are dark and dreary depress and restrain; days that are bright and cheery stiffen the spine and send us happily on the way. It is interesting and speculative because it is uncertain, and no subject serves so well in the distressing emergency of not knowing what else to talk about. Mark Twain remarked that in spite of all we say about the weather, nothing ever had been done about it. Since we can't change it, we can do the next best things—accept what comes philosophically and through observation become rather accurate guessers of what the weather will do next.

Even the worst kind of weather isn't half bad if one knows by a safe margin what is coming and gets ready for it. The ability to read the skies ranks in importance with the knowledge of what woods make the best fires or what fruits or mushrooms are edible. Some say that the weather-wise, like the poets, are born. But appreciation of poetry can be aided by study, and weather wisdom can be cultivated by observation. True, the weather reserves the right to change its mind, and not infrequently it takes advantage of this privilege. Yet the better boys and girls know the weather signs the surer they are of guessing right, and the better the average of their prophecies. Many of these signs have been thrown into rhyming lines that make prophecies which run quite true. For instance this old rhyme which has more truth than poetry:

> The evening red and the morning gray
> Are the signs of a bright and cheery day;
> The evening gray and the morning red
> Put on your hat or you'll wet your head.

This is a very old saying. In Matthew's gospel, Chapter 16, Verse 3, Christ refers to this phenomena of the sky in almost identical words to rebuke the Pharisees for their ability to discern signs in the sky while unable to read the signs of the times. So if the verse did not have virtue it would have been discarded long since.

This verse, like most of the weather rhymes, has a scientific basis. Briefly, the sunlight is white light which is a combination of all colors. Atmosphere which is full of dust and moisture particles breaks up the ray of white light into the various colors. The colors which have the longest and shortest vibrations, red and violet, respectively, make their way through the atmosphere while the others are reflected or refracted back, mixed up, and make the color we call the blue sky. If the atmosphere gets very full of particles of moisture, all the rays are reflected alike and we have the grayish appearance that a fog produces. So a gray evening indicates a moisture laden atmosphere, and as night approaches, the temperature lowers, condensation continuing about the little particles of dust in the air.

A gray evening indicates a great deal of finely condensed moisture. If the temperature continues to lower, it may reach a point where it can hold no more moisture (dew point) and rain ensues. A gray morning on the other hand, indicates a cool clear night with unhampered radiation from the earth's surface. The air is full of moisture but the sun's rays increase the capacity of the atmosphere to hold moisture, the gray mists disappear, and a clear day ensues. A red evening means that there is moisture in the atmosphere, but not enough to cause rain even with the further increase due to the night's condensation. A red m o r n i n g means a high heavy blanket of moisture in the high levels. This blanket prevents evaporation during the night, so when the day's evaporation adds more moisture to that already in the high levels, the total is likely to increase beyond the dew point with rain resulting. So the appearance of the sky at evening and morning serves as a valuable weather indicator, and the rhyme has a scientific explanation. Let's try a few more:

Cirrus clouds that fly so high,
Fill the sky with mackerel fry.

Mackerel scales and mares' tails,
Make lofty ships carry low sails.

Sound travelling far and wide
A stormy day will betide.

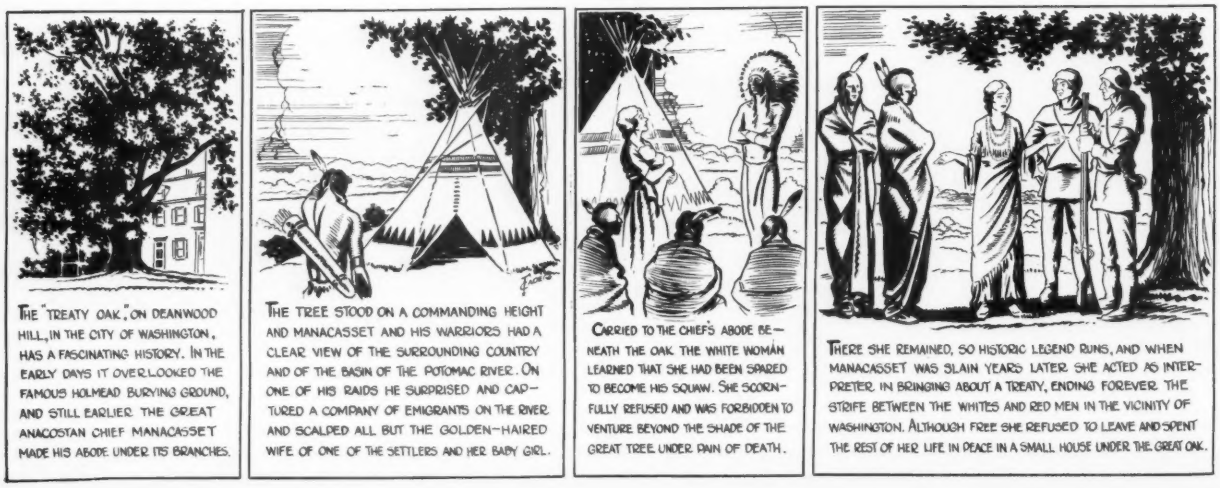
When the atmosphere is full of moisture the temperature becomes equalized, the irregular densities of air that hamper the vibrations (you have seen distorted objects through the rising heat off pavements) have disappeared and both the sight and sound faculties seem keener, hence the saying:

The farther the sight, the nearer the rain.

The saying that the sense of smell is increased before a storm has a basis in fact. Increased humidity buoys up odors and depresses smoke. Flowers are more fragrant, and the smoke from the campfire (*Continuing on page* 190)

FAMOUS TREES EVERY BOY AND GIRL SHOULD KNOW

No. 6---THE TREATY OAK


THE "TREATY OAK," ON DEANWOOD HILL, IN THE CITY OF WASHINGTON, HAS A FASCINATING HISTORY. IN THE EARLY DAYS IT OVERLOOKED THE FAMOUS HOLMEAD BURYING GROUND, AND STILL EARLIER THE GREAT ANACOSTAN CHIEF MANACASSET MADE HIS ABODE UNDER ITS BRANCHES.
THE TREE STOOD ON A COMMANDING HEIGHT AND MANACASSET AND HIS WARRIORS HAD A CLEAR VIEW OF THE SURROUNDING COUNTRY AND OF THE BASIN OF THE POTOMAC RIVER. ON ONE OF HIS RAIDS HE SURPRISED AND CAPTURED A COMPANY OF EMIGRANTS ON THE RIVER AND SCALPED ALL BUT THE GOLDEN-HAIRED WIFE OF ONE OF THE SETTLERS AND HER BABY GIRL.
CARRIED TO THE CHIEF'S ABODE BENEATH THE OAK THE WHITE WOMAN LEARNED THAT SHE HAD BEEN SPARED TO BECOME HIS SQUAW. SHE SCORNFULLY REFUSED AND WAS FORBIDDEN TO VENTURE BEYOND THE SHADE OF THE GREAT TREE UNDER PAIN OF DEATH.
THERE SHE REMAINED, SO HISTORIC LEGEND RUNS, AND WHEN MANACASSET WAS SLAIN YEARS LATER SHE ACTED AS INTERPRETER IN BRINGING ABOUT A TREATY, ENDING FOREVER THE STRIFE BETWEEN THE WHITES AND RED MEN IN THE VICINITY OF WASHINGTON. ALTHOUGH FREE SHE REFUSED TO LEAVE AND SPENT THE REST OF HER LIFE IN PEACE IN A SMALL HOUSE UNDER THE GREAT OAK.

RECLAIMING TENNESSEE LANDS

(*Continued from page* 150)

so steep it was impossible to plant trees on their slopes. In such cases planting was confined to the floor of the gullies alone, and it was found that eventually the trees established themselves to a level high enough to prevent further caving in and sloughing off of the banks. While locusts set in this way might have taken care of themselves, we found that a little assistance from time to time in the way of cultivation and pruning produced quicker growth and better post trees.

The success of this simple and inexpensive procedure which any farmer himself can follow during spare time, is best described by the photographs accompanying this article. As the method became refined and known the demand from farmers throughout the state for black locust planting stock outstripped our ability to meet it, although the state forest nursery established in 1927 was by 1930 producing around a million seedlings. Although no exact record was kept of the acreage thus reclaimed, it is known that black locust reforestation in Tennessee has played an important part in restoring about two thousand acres as productive farm units, supplying high quality fence posts needed on the farms or readily saleable. In addition to fence posts, black locust wood normally finds a ready market for other purposes such as insulator pins, single and double trees for plows and sometimes for porch flooring. As a farm-woods tree that black locust is also an asset from the standpoint of small game which finds it a desirable place in which to live and propagate.

Once the locust has reclaimed an area and stopped erosion it does not necessarily follow that the land must always remain a locust plantation, if the owner elects to change the crop. Often the locust trees may be cut and the land cleared and cultivated in agricultural crops depending, of course, upon the character of site and the danger of erosion again starting. Or the locust plot can be turned into another type of tree plantation by setting it to other species, or by encouraging volunteer species to predominate. On some of the areas that we restored by locust reforestation, poplar, walnut, sweet gum and oak came in naturally and grew well in locust stands. I have no doubt but that certain conifers would be admirable trees to plant as an under-story to locust, although experimentation in this regard was not carried far enough to yield conclusive results.

During the course of our work I was sometimes asked, "Why reclaim these gullied areas? Why not let them remain and try to prevent gullies from starting on other lands?" The answer is, of course, that erosion once started can be most easily and cheaply controlled at its source. It not only keeps eating into adjacent property but it unloads its eroding material upon good bottom lands with every flood and its destructive effects are felt not only upon the areas actually being destroyed and immediately adjacent lands but for hundreds of miles along the streams which are called upon to carry away the eroded earth.

To rehabilitate the gullied and devastated lands of the Tennessee Valley is not only possible and practicable but essential to the permanent welfare of the region as a whole. It is a task that may well challenge both the states concerned and the national government, and it will call for a tremendous amount of creative work.

TREE PLANTING AIDS UNEMPLOYMENT

(*Continued from page* 161)

Others were satisfied to receive pay for a few bushels. In all, it is estimated that at least 500 families received some part of the $20,000 which the Department paid for the cones —a supply of several species sufficient to last three years.

These are the methods used in the State of New York to afford unemployment relief through forestry practices. Other relief was given through the development and improvement of State game preserves and fish hatcheries. All told, the State Conservation Department gave extra employment to at least 25,000 persons during 1932. Many of these were engaged in work in the State Parks, which are rather closely related to forestry. For instance, in the Palisades Interstate Park, about forty-four miles above New York City, 1,300 men have been working all winter clearing underbrush, building roads and trails, and erecting shelters. In the Long Island Park area there are more than 2,000 men at work, using allocations from unemployment relief funds. They are clearing brush, improving park ponds and lakes, opening up wooded areas, repairing road shoulders and embankments, planting and transplanting trees and bushes, and generally improving this public property.

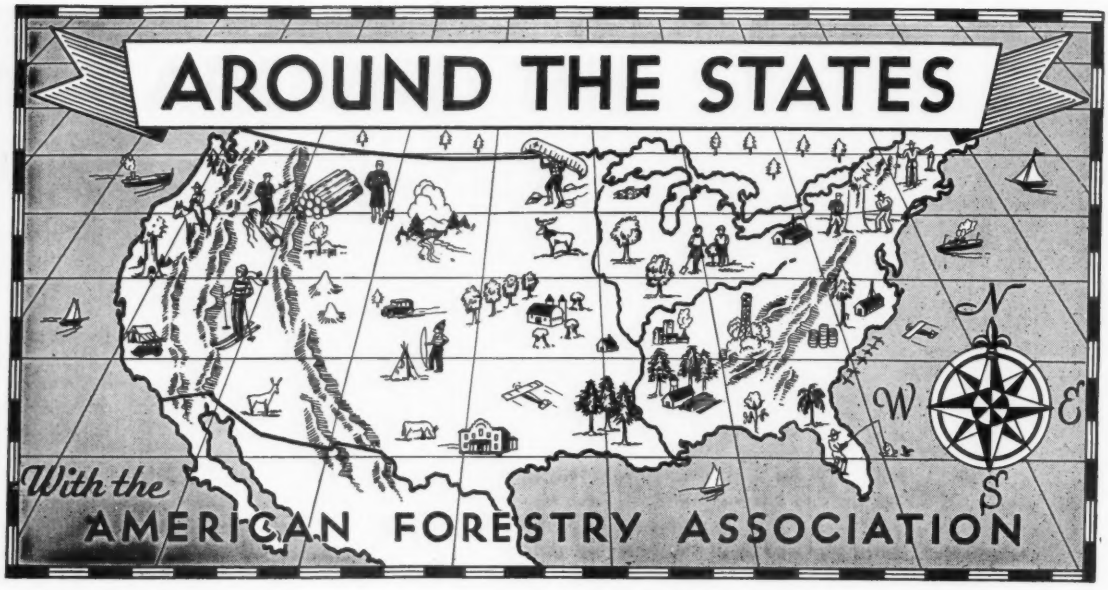
As to the applicability of the New York State plan to other parts of the country, it is difficult to venture an opinion. Conditions in each state differ so widely that no state may be held up as a model, except in very general terms. Certainly, however, President Roosevelt's basic idea that each state should inaugurate first of all a comprehensive land utilization survey, to be followed by a definite program of making all its land useful, is applicable everywhere. The State of New York is now engaged in such a survey.

Every state should find out which of its lands are suitable for the continuance of agriculture, which might be devoted entirely to mining, which are suitable for foresting, and which are entirely useless. Then, in so far as forestry is concerned, it should be set up in a program, probably extending over a term of years, which without doubt would be beneficial from the standpoint of future timber supply, protection of water sources, and the health and recreation of its people. Too, it would aid in the solution of the farm problem by withdrawing unsuitable lands from agriculture. And, in the carrying out of such a program, each state undoubtedly could give employment to many thousands of men, not merely relieving the immediate unemployment situation but extending this relief over a term of years, probably until such time as industry has adjusted working periods to the continuous threat of technological unemployment.

In New York the business of changing poor farms into good forests will continue to give employment to thousands of men for the next ten years at least. The mere planting of trees is not the only activity requiring considerable labor. Throughout the continuance of the reforestation program there will be increasing need for the clearing of reforested areas, the protection of these expanding areas from fire, pests, diseases and, later, as the tree crops grow, for the practice of scientific thinning out operations, so that New York's new forests may produce the limit of their capacity in lumber and pulp.

For while the Forest Preserve is forever inviolate, the new reforested areas are being planted and will be used to grow tree crops. At the proper time, a generation hence, it is proposed that these areas be used to provide wood and consequently a revenue to the State. Such cutting, according to present plans, will not be done on the old basis of devastation, but each area, after cutting, will be replanted in accordance with the most intensive scientific silvicultural practice.

New York, therefore, is not merely planting forests for health and water supply protection. It is looking forward to reviving an industry which will give employment far into the future.



Roosevelt Empowered to Reorganize Government

More definite powers of government reorganization are given President Roosevelt in the Treasury-Post Office Appropriation Bill passed during the last Congress than were given former President Hoover. The recent act gives the President two years in which to issue Executive orders to transfer, consolidate or abolish the whole or part of any bureau or other executive agency on the basis of such investigations as he may make. The only exception is that he cannot abolish an entire executive department.

Such an Executive order shall be submitted to Congress while in session and shall not become effective until sixty calendar days have expired, unless Congress shall provide for an earlier date. Congress can disapprove the Executive order only by passage of a bill to that effect. This, in turn is subject to Presidential veto, so that final disapproval will require a two-thirds vote by Congress.

Responsibility for making the studies and recommendations to the President are placed with the Bureau of the Budget. The new Director of the Budget is former Representative Lewis W. Douglas, of Arizona, who for several weeks has been working on a plan of reorganization for Mr. Roosevelt.

Minnesota Commission Suspends William T. Cox

William T. Cox, Minnesota State Conservation Commissioner since August 1931, was suspended on February 11 by divided action of the Commission, and E. V. Willard, State Drain Commissioner was appointed acting head, pending a hearing before the Commission on March 31. Mr. Cox was given until March 13 to reply to the charges.

Action by the Commission followed a demand by Governor Olson that Mr. Cox and the members of the Commission patch up their differences or immediately remedy the condition for the best interests of conservation. "If it is impossible to restore harmony and compose differences," said the Governor, "I urge the Commission to take such immediate action as it deems necessary to remedy the deplorable condition that now exists."

The resolution which was approved by three out of five of the Commission charged that Mr. Cox has followed a systematic course of contempt for the Commission and its policies; shown a complete lack of executive ability; done nothing to improve the Minnesota Forestry Service; done nothing in matters pertaining to drainage and waters; and evinced continued apathy and indifference toward the development and regulation of the tourist business. Chairman William E. McEwen, of Duluth, was joined in his request for the resignation of Commissioner Cox, by John R. Foley, of Wabasha, and James T. Williams, of Minneapolis. Mr. McEwen died suddenly on February 14. Ernest R. Reiff, of St. Paul, moved to table the resolution on the ground that more careful study was needed and that he personally had lost confidence in some members of the Commission. He was joined in his request for delay by Richard R. Bailey, of Virginia.

Representative W. C. Hawley

Shortly after the charges were made public, Mr. Cox filed a statement with Governor Olson in which he referred to the Conservation Act of 1931 which created the five-man Commission and gave the Commissioner administration of the Department of Conservation.

Contending that the Commission's functions are to appoint the State Commissioner of Conservation and to determine policies, Commissioner Cox said he was appointed with the understanding he would be given a reasonably free hand in organizing and administering the Department. Instead, he claims, he has been restricted and interfered with at every turn.

"I have been willing and anxious to cooperate with the Commission and to have its advice and approval in the more important matters needing attention," declared Mr. Cox in a statement published in St. Paul. "But it is manifestly impossible for the head of this Department to function properly if he is not given control of the personnel of the Department and of the funds authorized by the legislature for conservation work."

National Forest Reservation Commission Loses Hawley

Willis Chatman Hawley, Representative in Congress from Oregon since 1907, and the only member of the National Forest Reservation Commission to serve continuously since its creation in 1911, will not return to the next Congress, having been defeated in the last election.

In his departure Congress will lose one who has contributed largely to America's conservation and forestry programs. During nearly twenty-two years with the National Forest Reservation Commission, Representative Hawley has been active in his studies of the purchase units considered by the Commission for inclusion in the National Forest system in the East—a system which now comprises 4,727,680 acres. Not only has the Oregon Representative served well the forest purchase program, but he has given his support to practically all constructive conservation legislation.

Representative Hawley is a native Oregonian, who for more than forty years previous to his election to Congress in 1907 had distinguished himself as a lawyer and educator. For several years he was president of Williamette University, in Salem, Oregon.

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States Offer 415,000 Man-Months of Forest Work

Unemployment relief possibilities on forested lands within the states, other than federal owned lands, aggregate 415,009 man-months, according to estimates compiled by the United States Department of Agriculture and submitted to Senator Robert W. Wagner, of New York, on February 14. This would provide a season's work of 150 days to 69,168 men, or a year's work of 300 days to 34,584 men.

Previously the Department of Agriculture had reported to Senator Wagner that work to be done on the National Forests of the country would furnish employment aggregating 135,000 man-years, or a month's work for 2,000,000 men.

Estimates of work possibilities on forested lands within the states, which embrace state owned forests, municipal owned forests, and privately owned forests, are divided as follows: States east of the Mississippi River, 321,471 man-months; states immediately west of the Mississippi River, 11,547 man-months; and far western states, 81,991 man-months. The total cost for this work would exceed $32,000,000.

As with work on the National Forests, the Department's estimate designates work possibilities in the states as of two classes. Class "A" consists of projects or activities for which appropriations would normally be made, including the construction of telephone lines, roads, trails, fire breaks, water development, public camp improvement, reforestation, and other range and forest cultural work. Class "B" work includes activities of a similar character but of less importance and therefore of low priority. It would include also activities to control erosion, to eradicate poisonous plants and rodents and other miscellaneous work. Of the total 415,009 man-months reported by the states, 224,781 are designated Class "A" work, and 190,228 Class "B" work.

According to Senator Wagner, the state agencies submitting these estimates were unable in many cases to give precisely how much money their states might desire to borrow for the purpose and prepared their estimates on the basis of the work that could be done and the probable extent of which, in their opinion, loans would be requested by the states.

Work estimates, in man-months, reported by states east of the Mississippi River, and including state, municipal and privately owned lands, follow:

Alabama, 2,410; Connecticut, 8,482; Delaware, 599; Florida, 2,460; Indiana, 8,478; Maine 41,934; Maryland, 82,361; Massachusetts, 14,956; Michigan, 6,433; Mississippi, 8,186; New Hampshire, 7,200; New York, 26,342; North Carolina, 6,515; Ohio, 1,537; Pennsylvania, 29,451; Tennessee, 11,691; Vermont, 2,321; Virginia, 52,025; and Wisconsin, 8,090.

States immediately west of the Mississippi River: Arkansas, 625; Minnesota, 10,818, and Oklahoma, 104.

Far western states: California, 42,011; Colorado, 86; Idaho, 14,100; Montana, 2,514; Oregon, 16,200; South Dakota 1,500, and Washington, 5,580.

National Park and Monument Claims Investigated

The National Park Service according to Horace M. Albright, director, is now investigating claims of forty proposed National Parks and fifty-four proposed National Monuments. During the past year final decisions have been reached on twenty-four areas, seven of which have met the National Park and Monument standards.

Terming the selection of areas qualified to receive National Park or National Monument status one of the biggest problems which confronts the National Park Service, Mr. Albright said:

"From time to time the National Park Service is urged to consider areas for National Parks and National Monuments in practically all sections of the country. Many of the areas so advanced can be turned down immediately upon presentation because we know from their qualifications as presented that they do not possess the qualities necessary for their establishment as National Parks or Monuments. Also areas are often advanced by persons not entirely familiar with the National Park and Monument standards, nor with the policy that has been adopted largely through acts of Congress, for the establishment of such reservations. When they are informed that National Parks must possess outstanding scenic qualities, examples of unusual natural phenomena, or of unusual historical or scientific interest, that they must be of sufficient size to allow the development of tourist facilities on a large and comprehensive scale, that they should not duplicate the major characteristics of any existing National Park, and that National Monuments are established only when the areas are of national interest through historic, prehistoric, and scientific reasons, the proponents often withdraw their suggestion of an area from further consideration.

"Again when we state that it has been the policy of Congress to carve National Parks out of the Public Domain, and in the East to establish National Parks only after the land has been turned over to the Government without cost, a good many areas are withdrawn from the list of proposed parks and monuments as many times we have found that areas are proposed with the hopes of selling the land to the Government.

"Further, it has been our policy not to recommend the establishment of a National Monument by Presidential Proclamation under the Antiquities Act, which involved to any extent the acquisition of private lands or extensive improvements.

"Many areas are suggested that appear to contain high qualifications for a National Park or a National Monument and which must be investigated before we can make a decision. When areas so qualified are submitted, we obtain from various sources all of the information available and enter the area on our list of proposed parks and monuments to be investigated. At the present time there are forty proposed National Parks and fifty-four proposed National Monuments on this list."

The three areas approved and added to the system during the past year are: The Great Sand Dunes National Monument, Colorado; Grand Canyon National Monument, Arizona, and White Sands National Monument, New Mexico. Those which have met the National Park and National Monument standards are: Proposed St. Croix Island National Monument, Maine; proposed Morristown National Historical Park, New Jersey; proposed Death Valley National Monument, California, and proposed Cedar Breaks National Monument, Utah.

New Primitive Areas in Wyoming

Two new primitive areas, located in the Shoshone National Forest, Wyoming, have been set aside by the Forest Service, to be known as the North and South Absaroka Primitive Areas. The North Absaroka extends from the Clark's Fork of the Yellowstone River to the North Fork of the Shoshone, and contains 379,460 acres. The South Absaroka area is separated from the first named by the valley of the North Fork of the Shoshone River through which the road to the Yellowstone Park passes. It extends south to the Absaroka Range and includes the watersheds of the South Fork of the Shoshone, the Greybull, and Wood rivers. It contains 614,000 acres. On the south, it adjoins the Stratfield Primitive Area within the Washakie National Forest. On the west, it is adjacent to the Yellowstone National Park and the Thorofare region within the Teton National Forest. These, together, make one of the largest wilderness regions in the United States.

Big Game for Sale

To prevent overgrazing on its big-game preserves, the Bureau of Biological Survey, Department of Agriculture has called for bids on this year's surplus animals, including 141 buffalo, 162 elk, and forty-five mule deer.

It is probable that most of the animals, says the Bureau, will be sold, but, by making special arrangements, a State or municipal park or zoos can obtain a few animals at cost of handling and transportation.

Mule deer, biologists state, are suitable only for regions west of the Mississippi River. The Bureau will not dispose of these animals for other than exhibition and breeding purposes. Surplus buffalo and elk that can not be disposed of for similar purposes will be sold for meat, though animals less than two years of age will be sold only for breeding and exhibition.

Big-game animals, the Bureau explains, have increased under protection. The preserves, however, have not increased in size, and some animals must therefore be disposed of to keep herds within the grazing capacity of present ranges.

New Territories Quarantined for Japanese Beetle

Parts of New Hampshire and Vermont are brought under restriction under a revision of the Japanese beetle quarantine and regulations announced by the Department of Agriculture, and the regulated areas in Maryland, Massachusetts, New York, Pennsylvania, and Virginia, are enlarged. The new regulations became effective January 1.

The territory newly added to the regulated area includes: The southern half of New Hampshire and Vermont; all of Massachusetts not heretofore under regulation; the Mohawk Valley of New York State west from Albany to Syracuse, and that part of the southeastern quarter of the State between the Mohawk Valley and the Pennsylvania line; all the remainder of Pennsylvania except Erie County; parts or all of Kent, Queen Annes, Caroline and Allegany Counties, and the cities of Annapolis, Cumberland, and Westminster, in Maryland; and those parts of Virginia extending from Fredericksburg north to Fairfax County, and from Suffolk in Norfolk and Nansemond counties, as well as all of Elizabeth City, county and the city of Richmond.

The regulations remain substantially the same as heretofore except for two important modifications. One of these is the exemption of commercially-packed apples from the requirement of certification. The other important change in the requirements consists in the provision for an isolated area at Richmond, Virginia.

Science Important Factor in German Forest Industry

"Application of the results of science and research to every-day wood using problems in Germany is maintaining the German forests in productive condition," says Dr. Otto Graf, director of the Government Testing Laboratory at Stuttgart, Germany.

Dr. Graf recently came to the United States and is conferring with leaders in the field of wood utilization and timber testing. "In spite of the difficult financial and industrial conditions in Germany," Dr. Graf continues, "the German research activities in the field of wood utilization have been maintained. It is universally realized in Germany that efficient wood utilization is the keynote of the entire German forestry program. New uses for wood are constantly being developed by scientists and research workers. For instance, a recent development is the commercial production of cattle feed from wood waste.

"German engineers have developed new wood construction methods that have brought about important economies in construction costs, and more efficient use of wood. Engineering laboratories already have accomplished important results in the treating of lumber to resist the attack of insects and decay, in fireproofing, and in the hardening of wood.

"The relative position of wood as a raw material in Germany is less important than that of wood in the United States. In Germany there are less than a dozen species of wood, whereas in the United States there are nearly a hundred different species."

Dr. Graf is making his headquarters with the National Committee on Wood Utilization of the Department of Commerce, with which he has been in touch for several years, exchanging information and ideas in regard to research in the wood products line.

France Increases Duties on Lumber

The French general and minimum import duties on common woods, including logs and sawn lumber, have been substantially increased by a decree effective immediately, according to Commercial Attache Fayette W. Allport, in Paris.

The products on which the duties are increased are those under the following items of the French import tariff:

Common woods: Item 128—in the log, rough, not squared, more than sixty centimenters in circumference at the large end; squared or sawn, including railway ties; item 129—paving blocks, cut in pieces; item 130—stave wood; item 131—thin split wood; item 132—hoop wood and prepared small poles; item 133—perches, poles and staffs, rough, more than 1.1 meters long and not over sixty centimeters in circumference at the large end.

Army Planes Drop Material to Build Shelter for Rangers

Only the bombing by Army Air Corps planes using building materials as bombs enabled the Forestry Service to build a badly needed shelter for forest rangers in a lonely mountain valley in a Hawaiian National Forest, the War Department has been informed.

The point where the hut was required was accessible only by dangerous mountain trails over which the materials could not be transported. Galvanized iron for sides and roofing, wooden framework materials, nails and tools were made into "bombs" and attached to the bomb racks of an Army plane.

The plane flew the heavy load over the Waianae Mountains and dropped it to the satisfaction of all concerned at a point which had been designated by Charles S. Judd, territorial forester.

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California Gets Loan of $281,000 for Forest Camps

California was granted a loan of $281,372 by the Reconstruction Finance Corporation on January 13, to aid in meeting the cost of operating state labor camps for non-resident unemployed men during the period from January 1 to February 28, 1933.

When applying for the funds, S. Rexford Black, of the California Forest Protective Association, and representative of the Governor of California, reported that since word of California's labor camps spread East, a daily average of 1,200 non-resident jobless men have entered the State. Neither State or county laws permit the use of public funds for the relief of non-residents, so the State established a number of work camps where non-resident men can work six hours a day in return for food and shelter. Men who refuse to work in return for their keep, according to Mr. Black, are forced to shift for themselves along with the other 150,000 non-resident men who have mistakenly gone to California in the hope of spending a comfortable winter.

Appearing before Senator La Follette's Committee on Manufactures to testify regarding relief bills S. 5125 and S. 5141, on January 13, Mr. Black stated that he was in Washington seeking a loan of $600,000 under the section of the Reconstruction Finance Corporation Act which permits governors to apply for funds when local resources are inadequate to meet the relief needs.

Mr. Black told how the work was started with $100,000 from the State emergency fund, augmented from regular appropriations to the Division of Forestry.

Tariff Commission Studies Wood Pulp Costs

An investigation into the costs of producing wood pulp and related products in countries competing with the United States has been started by the Tariff Commission in accordance with Senate Resolution 365 adopted on February 22.

The present inquiry embraces production costs, a factor which has hitherto been omitted from the Commission's studies of wood pulp.

The Commission's last investigation of wood pulp was completed about six months ago, when a report was made on the various economic phases of the industry such as production, consumption and prices. Pulp timber, pulp wood and wood pulp are on the free list and therefore excluded from the Commission's rate-fixing jurisdiction.

Death Valley Becomes National Monument

Famous Death Valley, the lowest point in the United States, became a National Monument under the National Park Service of the Department of the Interior on February 11, by Presidential Proclamation. The area of the new monument is approximately 1,601,800 acres.

Death Valley is a land of fascination, of weird contrasts. Greatest contrast of all is the range in altitude. According to the United States Geological Survey, it is 276 feet below sea level, and claims are made, but not yet officially verified, that at Bad Water the valley lies 310 feet below sea level. Yet only eighty-six miles away, and visible from the mountains surrounding Death Valley, is Mount Whitney, the highest point in continental United States outside of Alaska. The altitude of Mount Whitney is 14,496 feet. The greatest vertical rise to be found anywhere in the United States, again excepting Alaska, occurs in the new monument, from the floor of the valley to the top of Telescope Peak, which is 11,045 feet high.

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State Cooperation Sought for Proposed Tennessee River Project

The Southeastern Council, in a resolution adopted March 1, urged the various conservation departments of the eight states represented in the Council to maintain their efficiency and to be in a position to lend additional cooperation to the Federal Government in event of the development of the Tennessee River Basin Project, recently proposed by President Roosevelt.

The resolution, in full, follows: WHEREAS: President-elect Roosevelt has definitely stated that the proposed development of Tennessee River Basin, as a beginning of a nation-wide land use program, is to be a cooperative project amongst Federal, State and local governments, and

WHEREAS: The logical state agencies through which the cooperation will be effected are: geological surveys in development of mineral and water resources, and preparation of maps which are particularly essential to accurate and comprehensive planning; forestry departments in surveying present conditions and planning proper forest protection and reforestation; soil surveys and agricultural advisory agencies, including the extension service and vocational schools, in determining land types and their best uses; and all of these agencies in working toward a concerted plan of land utilization,

Be It Resolved, That the Southeastern Council, representing the states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee, while recognizing the imperative need of budget balancing, respectfully call to the attention of the Governors and Legislatures of these states the need of not only maintaining the efficiency of the above mentioned state agencies but of also placing them in a position to join in any additional cooperation which may be called for by reason of Federal action rather than involving a serious and perhaps fatal delay by postponing desirable action to future legislative sessions.

Unemployment Relief in Lake States

About 5,000 people have been helped by the $100,000 winter work program of unemployment relief in the National Forests of Michigan, Minnesota and Wisconsin, according to Regional Forester E. W. Tinker.

Payrolls averaged about 1,000 men per month, over half of whom had families. The crews were rotated in order to divide the work among a larger number. Wages were fifteen dollars a month and board at the camps, and thirty dollars a month for others.

Cornell Reorganizes

The work of the Department of Forestry at Cornell University is to be devoted primarily to research and to the teaching of graduate students who seek advanced degrees, according to an announcement by the Board of Trustees. Undergraduate instruction in professional forestry is to be discontinued.

Dr. Livingston Farrand, President of Cornell University, announced that this plan had previously received the endorsement of Dr. Frank P. Graves, Commissioner of Education, and of the Board of Regents of the University of the State of New York. Its essential features are, that with the beginning of the next academic year, 1933-34, the Department of Forestry of the New York State College of Agriculture will cease to receive undergraduate students of professional forestry.

Those undergraduate students of professional forestry now in residence in Ithaca, the classes of 1933, '34, '35, and '36, will be carried through to graduation with the B. S. degree.

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Book Reviews

OUT-OF-DOORS—A GUIDE TO NATURE, by Paul B. Mann and George T. Hastings. Published by Henry Holt and Company, New York. 448 pages—Illustrated. Price $1.60.

Interest in nature, where young people are concerned, is not to be bound by formal treatment or by segregation prescribed by a curriculum, the authors believe. They have set out to prove that in place of a scientific tome of intense specialization, what is really needed is a friendly guide when in the field, on walks, or in camp—something interpretative by text and illustrative of the whole field of nature, yet something handy.

In *Out-of-Doors* they have submitted proof in plenty. The book is a perfect storehouse of knowledge, so presented as to be interesting—at times fascinating—and done in convenient handbook fashion. It is primarily for young minds—but adults will find it far more satisfying, and workable, than books of a more scientific nature.—E. K.

A STUDY OF THE GENUS PODAXIS, by Elizabeth Eaton Morse. Reprinted from "Mycologia," 1933, Lancaster, Pennsylvania. 33 pages—Illustrated.

The author describes, in this thorough study, the fungus as "Podaxis Desv.—a generic name now applied to a peculiar fungus which occurs generally though intermittently in somewhat restricted areas in a belt encircling the earth approximately within the fortieth parallels north and south of the equator." The life history of this fungus has never been fully made out, though it has been known to botanists for over two hundred and fifty years and the findings of the author, here so clearly and concisely compiled, will bring valuable and interesting material to mycologists. The fine series of photographic plates, with their explanation, increases the value of this publication to science.—L. M. C.

THE LONG HILLS, A Saga of the Alleghenies, by Frederic Brush. Published by the Roland Swain Company, Philadelphia, Pennsylvania. 170 pages. Price, $2.00.

This gripping poem is more than the life history of one man, though the figure of Thirlo Bard stands out strikingly from the rugged background. Fascinating sketches of other characters are woven into its fabric,—and the spirit of pioneer days, of hard but healthful living and straight thinking. It is a story of our early eastern pioneers who opened the path to the west by conquering the forests of the Alleghenies, opening new lands to the ploughman. And of their lumberman descendants, who felled the trees that clogged our rivers two or three generations ago, chanting their ballads as they fought their rafts through white water. The soughing of forest trees, the brooding calm of the mountains, the roar of river and the ripple of stream are the music to which Dr. Brush has set his virile poem. American folk literature is enriched by *The Long Hills*.

L. M. C.

MARINE BORERS AND THEIR RELATION TO MARINE CONSTRUCTION ON THE PACIFIC COAST—Prepared under the direction of the San Francisco Bay Marine Piling Committee, cooperating with the National Research Council and the American Wood-Preservers' Association. C. L. Hill and C. A. Kofoid, Editors-in-chief. The University of California Press, Berkeley, California. 357 pages—Illustrated. Price $5.00.

Marine borers, ship worms or teredos are a menace to all marine structures. In the region of San Francisco Bay and along the Pacific Coast, the problem is of such magnitude that in 1920 the University of California secured the appointment of a special committee for their study. This committee, consisting of engineers, biologists, and industrial leaders, supervised the studies which form the basis of this book. The several sections—Historical, Hydrographic, Engineering, Chemical, and Biological, are each prepared by authorities in those lines.

The book as edited by Mr. Hill and Professor Kofoid presents a historical record of marine borer damage, the biology of the several varieties of borers, the problems of the engineer, and suggestions for marine borer control. The fact that many of these borers are found in most of the commercial waters of the temperate zones, makes the report of world-wide importance.

Some idea of the severity of the attacks may be realized by the statement that "under conditions obtaining in San Francisco Bay from five to six months is sufficient time for untreated piling to be entirely destroyed at the mud line."

To quote again from the book—"Recurring invasions of Teredo and the infestation of localities previously immune are not matters of caprice, but depend upon definite combinations of conditions, which properly understood, afford a practicable basis for anticipating attack and adopting intelligent measures of control. It accordingly becomes imperative for the engineer to familiarize himself with the conditions in his own locality, and to know in advance the problems to be met."—G. H. C.

THE ARCH OF SPRING, by Paul Southworth Bliss. Published at St. Louis, Missouri. 47 pages, decorated with linoleum blocks by Harold J. Matthews. Price $1.50.

"Through the golden arch of spring,
Life comes thrusting, clambering!"—

and every page of this book of verse brings a new and vibrant song to the lover of trees and flowers and all the world of the out-of-doors. Fresh and clean,—forceful—painting a clear and joyous picture, his lines run musically withal they carry an under-current of thought for those who seek, and find, a deeper meaning in Nature's book.—L. M. C.

AMONG THE CURRENT PUBLICATIONS

Trees of Indiana, by Charles C. Deam, 4th edition, Indiana Department of Conservation, Division of Forestry, Indianapolis, Indiana. Leading off with the description of the tulip tree, Indiana's official State tree, Professor Deam presents a beautiful edition with remarkable photographs showing the leaves and in many cases the fruit and buds of 135 trees native to the State. The range of each tree is shown on a map of Indiana and the text is prepared with Indiana especially in mind.

Grasses of Indiana, by Charles C. Deam, Division of Forestry of the Indiana State Department of Conservation. This volume supplements Mr. Deam's valuable books on the trees and shrubs of Indiana. He has limited his presentation to the 201 species with nineteen varieties and seven forms of grass native to Indiana and has ignored the other nearly eight thousand species of grass growing in the world.

Shrubs of Indiana, by Charles C. Deam, 2nd edition, Indiana Department of Conservation, Division of Forestry, Indianapolis, Indiana. Like the companion "Trees of Indiana," this book is printed on highly glazed paper with excellent half-tone illustrations of nearly 150 shrubs. Maps show the range of each of the shrubs and phenological data show the time of blossoming.

Thirty-First Biennial Report, Department of Fish and Game, State of Vermont. Report of the Commissioner dealing with hatcheries, hunting, fishing, trapping, deer, pheasants, streams and distribution of fish.

Your Bird Friends—How to Win Them, by Joseph H. Dodson, of Kankakee, Illinois. Price, twenty-five cents. Brief and complete instructions in bird care, feeding and housing.

The Chemical Utilization of Wood, by Dr. Henry K. Benson, National Research Council, Washington, D. C. Released by the National Committee on Wood Utilization, Department of Commerce. Presenting a comprehensive picture of the wood by-products industries. Price, fifteen cents.

State Forestry Policy and Program for Tennessee, by James O. Hazard, State Forester, Circular No. 12, Tennessee Department of Agriculture, Nashville. Sets forth a program of demonstration forests of about ten thousand acres each.

Nature Garden Guide, The School Garden Association of New York, 121 East 51st Street, New York. Contains outlines for studying birds, animals and insects.

The Forests of Maine, by Austin H. Wilkins, Bulletin No. 8 of the Maine Forest Service, Augusta. An illustrated description of forest progress and ownership in Maine with statistics showing present supplies and production.

Seasonal Changes in the Chemical Composition of Range Forage and Their Relation to Nutrition of Animals, by G. H. Hart, H. R. Guilbert, and H. Goss. Bulletin No. 543, of the University of California, Berkeley. Includes tables and descriptions based on field observations in California to determine the effect of range forage of various kinds and conditions upon livestock.

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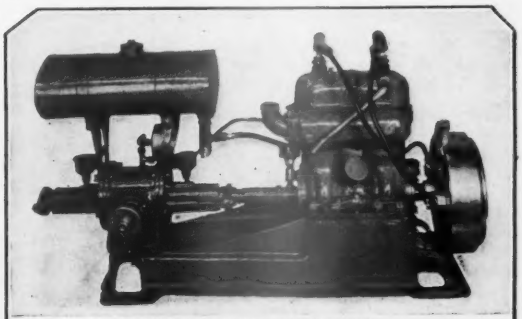

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Washington, D. C.

Forest Land Use Program for Michigan

A program of management for public lands that involves the development of all forest resources, such as timber, water, wild life and recreation, has been recommended for Michigan by the Society of American Foresters of that State.

In a resolution signed by all state members, the immediate initiation of such a program was called for to relieve present unemployment and to afford a permanent improvement in labor conditions. Eighty-five per cent of every dollar devoted to the program would go directly to labor, it was pointed out.

The actual work would include the building of roads, fire lookout towers, fire lines, the removal of fire hazards, and forest planting and thinning, together with other cultural measures, and the control of fire, rodents, insects, diseases, and lake and stream improvement.

The Society urged the immediate formulation of plans by federal and state agencies to put such a program into effect.

WOOD'S AWAKENING

By Carl E. Smith

Alas, for him, who never sees
The morning light sift through the trees
In woodlands, where the daylight's gleam
Steals, clear reflected, over streams
Where morning mists hang, soft and white,
And morning chill gives zest, and "bite"
To tingle toes and fingers cold,
As, awed with wonder, we behold
A new day born, upon the breeze
That rustles softly through the trees,
Like whispering Spirit, through His wood,
To softly tell us, "God is good!"

—From *Rhymes of Outdoor Life.*

Russian Lumber Imports Increase

Russian lumber to the amount of over 30,000,000 board feet valued at $316,513 was imported into the United States during 1932. This was in spite of a tax of $4 per thousand board feet, and followed the practical abandonment by the Treasury Department of efforts to enforce the law prohibiting the importation of goods made by convict and forced labor. In addition 44,721 cords of pulpwood valued at $480,738 came into the United States from Russia. Pulpwood imports have declined since the peak importation of 174,686 cords in 1930.

Russian softwood lumber imports during the past six years are reported by the Bureau of Foreign and Domestic Commerce as follows: 1927, 5,592,000 feet; 1928, 23,884,000 feet; 1929 37,936,000 feet; 1930, 70,767,000 feet; 1931, 13,831,000 feet; 1932, 31,410,000 feet.

Representative John G. Cooper, of Ohio, described the situation in the Congressional Record for February 22, and quoted a recent news release from Archangel, Russia, reporting a proclamation drafting all able bodied peasants, individuals, and collectivists in northern Russia for labor in the lumber camps from February 7 to March 10. The peasants were required to supply their own horses, according to the Associated Press, and were formed into brigades, each headed by a trusted appointee.

Boulder Canyon Lake To Be Wild Life Sanctuary

The great artificial lake to be created by the Hoover Dam on the Colorado River will become a refuge and breeding ground for wild birds and animals under an executive order signed on March 3. The new reservation will be known as the Boulder Canyon Wild Life Refuge. Superimposed on part of the land and water area withdrawn for the Boulder Canyon project for river regulation, flood control, irrigation, domestic water uses, and power development, the new wild life refuge will cover a total of about 620,000 acres, approximately 132,000 acres of which will be a vast artificial lake on that part of the Colorado River, in Arizona and Nevada.

Administration of the refuge will be by the Department of Agriculture, through the Bureau of Biological Survey, subject to use by the Department of the Interior for its primary purposes. Paul G. Redington, Chief of the Bureau of Biological Survey, in a statement issued March 7, said that the flooded area will be wholly in the Lower Sonoran Life Zone, with the hot summer and mild winter climate of the mesquite and creosote bush country, providing a breeding ground for many interesting birds and mammals of the southwestern desert region, and a winter resort for many northern migratory birds. "Formerly," said Mr. Redington, "it was a paradise throughout the year for Arizona quail, roadrunners, thrashers, and other birds. In winter, swans, snow geese, many ducks, some shorebirds, waders, and a host of other smaller migrant birds found a congenial resort in the Virgin and Colorado River valleys, the natural outlet of the Great Basin. When this area becomes a great lake, with curving bays and deep inlets cutting back into side valleys and gulches, it will again be a great attraction for northern waterfowl and provide cover and food for the resident birds that are pushed back from the middle of the valley.

"The refuge will be an oasis in an otherwise arid country on one of the southward bird-migration routes, a way station from Klamath Lake Refuge, Oregon, to the Gulf of California. The Federal Bear River Refuge, on Great Salt Lake, lies 400 miles northeast, the Salton Sea Refuge is 225 miles to the south, and the Fallon Migratory Bird Refuge in Nevada is about 350 miles northwest. The new refuge therefore should prove a valuable resting spot and winter resort for many waterfowl that now seek congenial waters beyond our southern border.

Wallace Keeps Present Grazing Rates on National Forests

Secretary of Agriculture Henry A. Wallace announced on March 9 that present grazing rates on the National Forests of the country would be maintained until a thorough study could be made. He said:

"I have been asked to state the policy of the Department of Agriculture on the question of fees for the grazing of domestic livestock on the National Forests for 1933. The grazing fee now in effect for this year is at an average rate of fourteen and one-half cents per head per month for cattle and horses and four and one-half cents per head per month for sheep and goats. These rates are based upon the rates prevailing for the use of forage on private lands comparable to National Forest lands. It has been announced to permittees that these rates will be in effect in 1933.

"After carefully considering the matter, I have approved the recommendations of the Forest Service that these rates be applicable for the first of the two payments of fees due in 1933; and that a study be undertaken immediately to determine the practicability of relating grazing fees to the market value of livestock; and whether for the second half of the year 1933 and for the year 1934 this method of establishing grazing fees should be used. The study will be concluded and decision reached in ample time to make such adjustments as may be found desirable in the second installment of fees for 1933 and to establish the fees for 1934."

Pheasants Increased at Cut Costs

News for sportsmen and farmers is the report that low cost management practices carried out at the Williamston Wild Life Management Project, Williamston, Michigan, have resulted in a 480 per cent increase in pheasants, at a cost of forty-seven cents a bird, as compared with the $2.60 which has been tentatively estimated as the cost of liberating each pheasant reared by State game farms.

Actual increases on two tracts totalling 1,360 acres were 480 and 443 per cent, says Professor H. M. Wight, of the University of Michigan School of Forestry and Conservation, who is in charge of the Williamston project. Costs of the management practices for the past year were 5.6 cents per acre, plus two cents for initial costs prorated over twenty years. Tracts left unimproved for comparison showed an increase of approximately 100 per cent in the pheasant population.

The aim of the project is to improve game range by well defined management practices so as to bring about a marked increase in the wild stock. Incidentally practices that are used add to property value by increasing the recreational and scenic values and produce assets in the form of fence posts, Christmas trees, fire wood and saleable timber, states Professor Wight.

Committee Prepares Black Walnut Planting Instructions

After considering hundreds of requests for information the committee in charge of the nut tree planting program has drawn up a set of instructions for planting black walnut. Although standard instructions accompanied the seeds sent to all who planted nut seeds from historic grounds, the committee has devised a set specially adapted to the needs of persons who participate in this conservation program. Simplicity, clarity, and brevity form the keynote of the directions which will go to boys and girls and amateurs in nut tree culture. For the more experienced tree planters the forester of The American Forestry Association and C. A. Reed, associate pomologist of the Department of Agriculture, offer their services in consultation.

The revamped planting instructions include directions for stratifying the nuts, planting them in nursery beds or in place, and transplanting to permanent locations. The advantages of grafting are pointed out, but the technique is so specialized and depends on such a high degree of skill that experimenters are advised to apply for more detailed information.

The committee which represents Boy Scouts of America, The American Forestry Association, Department of Agriculture, and American Walnut Manufacturers' Association, will distribute the advice to nut tree planters without charge.

Yosemite Natural History School

Forestry students, conservationists and nature counselors will be interested to learn of the announcement by the National Park Service of the ninth session of the Yosemite School of Field Natural History which will be conducted in Yosemite National Park from June 26 to August 11 this year and for which applications are now being received.

The principal purpose of the School is to train students in methods of interpreting nature. Practical field work is given in important branches of natural science.

The class is limited to twenty students. This year twelve men and eight women will be selected on the basis of qualification set forth in written applications and references furnished. Three years' college work or the equivalent, with background in sciences, are required. No tuition is charged with the exception of a $5.00 fee for materials.

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Belcher, H. D., Brook Forest, Colorado. *Price list—Evergreen Seed and Seedlings.*

Bountiful Ridge Nurseries, Box H, Princess Anne, Md.—*Catalog of Trees, Vines and Plants. Valuable information for home owners, commercial orchardists and small fruit growers.*

Brow Nurseries, F. W., Rose Hill, Onon. Co., New York—*"Bargain Booklet" of Roses, Shrubs, Perennials, Vines, Berry Plants, Bulbs, etc.*

Brown Company, Cupsuptic Nursery, Oquossoc, Maine—*Price list of Hardy Northern Grown Evergreens. Trees for Reforestation or Christmas Tree Planting.*

Buskirk's Aquarium, Independence, Ohio—*Illustrated Catalog of Water Lilies, Aquatic Plants, Fishes and Aquariums.*

Central Maine Forest Nursery, Skowhegan, Maine—*Price List—Evergreen Nursery Stock for Forest Planting—Both Commercial and Decorative.*

Elfgren Nurseries, East Killingly, Connecticut—*Price List—Evergreen Tree Seedlings and Transplants.*

Ferndale Nursery, Askov, Minnesota—*Hardy Ferns, Wild and Rock Garden Plants, Evergreen Seedlings and Transplants.*

Franklin Forestry Company, 89 State Street, Boston, Mass.—*Trees, Shrubs, Plants, Ornamental Evergreens.*

Herbst Brothers, Inc., 92 Warren Street, New York City—*Tree, Shrub and Perennial Seeds.*

Jones Nurseries, J. F., P. O. Box F-356, Lancaster, Pa.—*Grafted and Budded Nut Trees.*

Keene Forestry Associates, Keene, New Hampshire—*Price list Evergreens for Forest Planting.*

Kelsey Nursery Service, F. W., 50 Church Street, New York City—*28-page catalog with more than 50 color photographs of evergreens, trees, shrubs and vines, also Climate Map covering Northeastern part of U. S.*

Kunzman, E. L., New Albany, Indiana—*Price list of Indiana Dahlias and helpful information.*

Larson, Leonard C., 5921 N. Atlantic Avenue, Portland, Oregon—*Price list of Gladiolus.*

Naperville Nurseries, Naperville, Illinois—*Perennial Plants, Trees, Shrubs, Vines and Evergreens.*

Ransom Nursery Company, The, Geneva, Ohio—*"Evergreens for Every Purpose."*

Robbins, E. C., Ashford, N. Carolina—*Rock Garden Plants—Native Evergreens, Bulbs and Plants.*

Tabor, Rollin H., Mount Vernon, Ohio—*"Orchard and Tree Surgery Supplies."*

Thomsen Nursery Company, Mansfield, Pa.—*Catalog of "Rare Garden Aristocrats".*

Western Maine Forest Nursery Co., Fryeburg, Maine—*"Add Beauty to Your Home—Plant Evergreens," Illustrated Booklet, Evergreen Trees for Forest Planting and Lining Out.*

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●

When Writing for These Catalogs and Price Lists, Please Mention AMERICAN FORESTS Magazine

WHEN PINE WAS KING

(*Continued from page* 154)

too alarming. Soon those who had been clamoring for the crucial assignment of holding the chain, so that the owl might not escape when the tub was lifted for its transfer to a cage, would reluctantly give way in favor of the baited green hand. The victim to be, chesty from praise, would grasp the chain and brace his body in order to distinguish himself by holding the bird. Now the tub would be raised, revealing the owl as the squat, white unit of a China chamber set.

The woodsman's ideal camp-boss was mythical Paul Bunyon, renowned in the camp poet's verse:

"The greatest logger in the land—
He had a kick in either hand,
And licked more man, and driv more miles,
And got more drunk, in more new styles
Than any other peavey prince,
Before, or then, or ever since."

Startling tales emanated from the deacon seat narrators touting Paul's prowess as a logger. One would tell how Double-jawed Phalen, with his two rows of teeth, chewed the camp grindstone into bits while walking in his sleep, and how they did not mind that much as they readily improvised a method of sharpening their axes by rolling big stones down hill. They would lay the blade on a descending stone and follow it upon the run until the ax had a razor edge.

Another would exploit the single forty acres from which Paul logged the incredible amount of one hundred million feet of timber, then explain the absurdity with the information that it was a pyramid forty with timber growing sky-high on all four sides. The next narrator would tell of Paul's big ox that weighed five thousand pounds, and how the barn-boss made him a harness of all the hides of the slaughtered deer.

The first spring thaw brought restless exaltation to the woodsmen. Eagerly they awaited the "break-up." The sun would glow warm. Patches of ground would show through the slush, retarding camp activities that soon must cease. The roads turned soggy with the melting snow and served as conduits to augment the streams.

The evening programs now became boisterous. The woodsman's fancy had turned to thoughts of town and tinsel, of foaming "shupers" of hop-flavored beer. The drive? Ah, yes, it must be cared for, but after all it is the route to town!

Uneasy were the dozing rollways in the river's bed. They yawned and sighed, disturbed by swirl and spume of rising water. Soon they would awake, discarding sun-worn coverlets of soppy white, for they, too, heard the call for flood-time chaos.

"The flow is on!"

The rollway logs surged from their tiered conformity.

Groggy, like persons half awake, they moved as though bewildered for a time, then scrambled into wild activity. They mingled, moaned and groaned, and ground and whined, and upheaved and weaved, then wedged from bank to bank in a fantastic heap from which came rumbling protests of their weird mauling. Soon the great mass would strain again and "haul," then pour in flowing gradient from the gorge, without the aid of man.

"The flow is on!"

Upstream and on the timbered tributaries a score of camp crews had already heard the cry. Downstream the notice would be heralded by courier flood. Green hands, except for a selected few that had caught the foreman's eye as promising recruits for river work, packed their duds in grain-sack "turkey" and jagged down the tote-road trail to town. Old hands and prideful novices who got their "stripe" would go on the stream:

"The drive is on! Bold lumberjacks,
Pike-pole or peavey on their backs,
Jump on the racing logs that buck
Like bronchos that have gone amuck—
Black-Dan MacDonald, Dirty Dan,
Dutch Jake, Red Murphy, Pat McCann,
Long Alvin, Fightin-Hiram Weir,
Bad Silver-Jack and Big Fourneer—
And more that didn't give a damn—
The kind of lads to break a jam,
Clean out a barroom, rastle rum,
Or give a ten-spot to a bum."

The men went in before the ominous wall of dove-tailed timber, risking their lives each moment of the crafty quest for key-logs that, released, may start a break. Their practised eye caught every binding log that held the mass, and every menace that beset approach and retreat.

Quick steps ahead, to right, to left, sudden backward springs, big jumps to cover water space caught in a pocket of small logs, their feet moved faster than a magician's hand, leaving a wake of bobbing sticks and foam. Underneath the jutting crest of danger they heaved on the straining peavies that seemed extensions of their brawny arms.

A key-log yielded, stripping the corrugated dress from compressed binders. The timbers creaked and settled—the workers leaving as though spewed from the mouth of peril. When a jam broke, men were forced to move faster than the timber. One misstep, or a moment's faulty pause, may have ended in death.

The great mass heaved, moving doubtingly a space before jamming again. The scurrying men regained their pose, studied the bristling front with quick and grim appraisal and attacked again. Peavey and muscle and the current's vagary loosened some under-logs. As they shot free the wooden mountain sagged to fill the space they left, hurtling great, rough-barked javelins at the besiegers. It was miraculous how they escaped unharmed.

Log shacks at vantage points along the stream, perennial while they last, served as quarters for the crew at times, together with tents and the floating scows that shared the hazards of the drive. Whether it was shack or tent or scow, there was always the "wanigan"—a store where men could buy tobacco, mittens, socks and other things that they were apt to need.

The weeks passed while the logs glided down the stream, with daily hazards of wild water, rocks and sluicing. Full-jams gave way to hardy efforts of the crew, leaving strewn wing-jams which in turn were broken. The freshet slackened and the water ran less deep. Logs bumped on gravelly bottom. They "slacked" them off to float, their straining strength using the peavey in the "Canada" or "Saginaw" and other trick of added leverage.

On the small tributaries, dams were used to flush the logs when water failed. On the big river, dams were improvised by making jams. But they had to pick a place where banks would hold the head.

Long timbers, guided right, would span two midstream boulders, and logs piled high from bank to bank would check the flow. By morning there would perhaps be a five-

mile head in storage.

"The drive is down!"

Its front had hit dead water above the booms. There, in the subdued current of the spreading stream, a local crew that never saw "white-water" would sort the logs for ownership and milling.

"The drive is down!"

Their time-checks cashed, down the planked side-walks, studded with knots from which the fragrant pitch oozes in summer heat, striding with prideful "crunch" of biting calks, the drivers hit the town, spoiling for social action.

In the "First Chance" saloon, a mackinawed driver ordered the first round of drinks, insisting that the house join in the toast of "many happy days!" Paying the score, he slammed his change in silver dollars at the big bar mirror. Then he paid for the shattered glass, but not before he had told the house about the drink refused him the previous fall when he was broke. His honor was vindicated.

Around the "bend" of a street corner, they hit another bar.

The flow of rye is on!

All of this might be the mutterings of the swirling river, but it is history, too, and worthy of true chronicle. The pine is gone. The sawmills are dismantled. Survivors of the camp and drive have silvered hair.

Spreading afar from the AuSable memorial, meandering with the river's winding course, extends the largest planted forest area in all the world. State and Federal plats, with those of the Kiwanis Club, combine to give it this distinction. Credit for the reforestation urge belongs in part to those who made their wealth by trading in primeval pine.

Some day big sawlogs will again be skidded near the great bronze marker on the river's brink, but other means than flood and peaveymen will take them to the mill. Yet then, as now, and as it did before, the mighty river's flow will swirl along, and to some ear, attuned to catch the meaning of its mutterings, may tell again the tale of miles and miles of moving wood, and daring deeds of valiant men in the days when Pine was King.

HOMES OF BIRDS

(*Continued from page* 165)

floating raft the pied-billed grebe—the hell diver of marsh gunners — follows the most curious customs. The nest of the mother grebe is a bulky mound of moss, rushes and decaying water vegetation from the bottom of pond or stream. It is poorly built and raised only a few inches above the surface of the water, so that it's floor is never dry and the white eggs are invariably nest stained and soiled.

On leaving the nest the mother grebe gathers enough of this wet rubble to cover her eggs until the deserted nest looks like a low mound of rushes and moss. The heat of the sun on this wet mass acts as on a hotbed, and although the mother bird may be absent from her brooding for hours her eggs remain safe and unchilled.

Almost as interesting as these nest building methods are the devices of the birds who build no nest at all. For the most part they rely on protective coloring to secret them in their exposed locations on the ground. The mother whip-poor-will lays her two creamy white, mottled eggs on the dead leaves of the forest floor wherever her fancy pleases, not making so much as a shallow hollow to receive them. Yet so perfectly does her soft brown plumage blend with the colors about her that she may brood within arm's reach of you, and though your eyes fall directly on her the odds are you will mistake her for a weathered knot or a cluster of dry leaves.

The nighthawk, cousin to the whip-poor-will —you may know her as the bull-bat—likewise contents herself with no semblance of a nest, but her eggs are laid in the open, not in the deep forest. Open fields and gravel beaches are spots to her liking, but even more favored are the roofs of tall city buildings.

Here the nighthawks seemingly have learned they are safe from foes of almost every kind—cats cannot climb so high, foxes do not prowl the labyrinth of city streets, and even hawks and owls are loath to hunt above roaring, traffic-filled canyons.

The grouse of the northern forests takes little pains in the matter of nest building, although she does prepare a shallow, leaf-lined hollow in the ground for her buffy eggs. She, too, relies on her modest garb of brown and gray to hide her from unfriendly eyes.

The killdeer, nesting in open fields, gathers a few pebbles or dry bits of wood or weed stalks to form a harsh floor for her unlined nest, blending it into the ground.

It is a strange paradox that the crow, rascal of the feathered kingdom, should build one of the neatest and most shapely of bird nests. The home of this black rogue is a bulky platform of twigs and small sticks, firmly woven together, deeply hollowed and finished in the center with long shreds of bark or string.

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5 yr. Norway Spruce	2-2-1,	6-12 in.,	16
4 yr. Red Pine	2-2,	5-10 in.,	12
4 yr. Scotch Pine	2-2,	8-15 in.,	12
4 yr. Mugho Pine	2-2,	6-9 in.,	25
5 yr. Mugho Pine	2-2-1,	8-12 in.,	40
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6 yr. Canadian Hemlock	2-2-2,	6-12 in.,	15
5 yr. Carolina Hemlock	2-2-1,	8-12 in.,	20

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Conservation Calendar in Congress

Published monthly while Congress is in session as a service to the members of The American Forestry Association. This calendar contains bills introduced between February 1 and March 4, and those introduced prior to those dates upon which action has been taken. All bills not approved expired on March 4.

BILLS APPROVED

H. R. 13872—Department of Agriculture Appropriation bill for 1934. Passed House December 30, 1932. Passed Senate February 9. Approved March 3.

H. R. 13710—Department of Interior Appropriation bill for 1934. Passed House December 27, 1932. Passed Senate February 10. Approved February 17. Public Law No. 361.

H. R. 14769—Second Deficiency Appropriation bill. Passed House February 25. Passed Senate March 3. Approved March 4.

H. R. 14363—Appropriation bill for Department of State and Justice, Department of Commerce and Labor, for the year ending June 30, 1934. Contains $1,756,740 for the Bureau of Fisheries. Passed House January 28. Passed Senate, amended, February 16, Approved March 1.

S. 5469—BARBOUR—To provide for the creation of the Morristown National Historical Park in New Jersey. Passed Senate February 10. Passed House February 27. Approved March 2.

S. 5233—REED—To provide for the protection of national military parks, national parks, battlefield sites, national monuments, and miscellaneous memorials under the control of the War Department. Passed Senate February 9. Passed House February 27. Approved March 2.

S. 5612—JOHNSON—To provide for the selection of certain lands in the State of California for the use of the California State park system. Passed Senate February 25. Passed House March 1. Approved March 3.

S. Res. 365—DILL—Directing the Tariff Commission to investigate competitive conditions as they relate to the wood-pulp industry of the United States. Considered and agreed to February 22.

S. Res. 226—CAREY AND KENDRICK—To investigate the activities of the National Park Service in the Jackson's Hole, Wyoming, region. Passed Senate February 11.

H. R. 6684—LEAVITT—To authorize the Secretary of the Interior to modify the terms of existing contracts for the sale of timber on Indian land when it is in the interest of the Indians to do so. Passed House January 16. Passed Senate February 25. Approved March 4.

H. R. 189—ENGLEBRIGHT — To add certain lands to the Modoc National Forest, in the State of California. Passed House February 20. Passed Senate March 3. Approved March 4.

H. R. 12126—TAYLOR—To add certain lands to the Gunnison National Forest. Passed House January 16. Passed Senate March 3. Approved March 4.

MINING

H. R. 14646—ARENTZ—To extend the mining laws of the United States to the Death Valley National Monument in California. Reported to House Febrary 24. Report No. 2107. (S. 5700—Oddie.)

MISCELLANEOUS

H. R. 14662—ARENTZ—To establish, develop, and administer, the Boulder Canyon National Reservation, and to develop and administer the Boulder Canyon Project Federal Reservation. To Committee on Public Lands February 22. (S. 5637—Hayden.)

NATIONAL FORESTS

S. J. Res. 219—CAREY AND STEIWER—Authorizing the fixing of grazing fees on lands within National Forests. Passed Senate February 25.

S. 3009—MCNARY—Extending the boundaries of the Fremont National Forest. Passed Senate February 25.

NATIONAL PARKS

S. 5671—LOGAN—To amend Act establishing Mammoth Cave National Park in Kentucky to provide the minimum area to be administered and protected by the National Park Service to be twenty thousand acres. To Committee on Public Lands and Surveys February 20.

S. 475—FLETCHER—To provide for the establishment of the Everglades National Park in Florida. Passed Senate January 19, 1932. Reported to House February 16. Report No. 2049.

PUBLIC DOMAIN

S. 5613—KENDRICK—To provide for the granting of public lands to certain States, for the elimination of lands from National Forests, parks, reservations, and withdrawals in connection with such grants. To Committee on Public Lands and Surveys February 10.

H. R. 11816—COLTON—To stop injury to public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement, and development, to stabilize the livestock industry dependent upon the public range. Passed House February 7.

RELIEF

H. R. 14755—LEAVITT—To relieve unemployment by protecting, developing, and improving the National Forests. To Committee on Agriculture February 22.

REORGANIZATION

S. 5538—BRATTON—To establish a Department of Development and Conservation, to abolish the Department of Agriculture and the Department of the Interior, and to transfer the functions thereof to the Department of Development and Conservation. Unfavorably reported by both the Secretary of Agriculture and the Secretary of Interior on February 16.

WILD LIFE

S. 5302—FRAZIER—To grant to the State of New York and the Seneca Nation of Indians jurisdiction over the taking of fish and game within the Allegany, Cattaraugus, and Oil Spring Indian Reservations. Reported to Senate February 13. Report No. 1217.

S. 5485—WALSH—Establishing a State game refuge on islands in the Egg Lakes in the White Earth Indian Reservation in the State of Minnesota. Passed Senate February 25.

Ask the Forester?

Forestry Questions Submitted to The American Forestry Association, 1727 K St., N. W., Washington, D. C., Will be Answered in this Column. A Self-Addressed Stamped Envelope Accompanying Your Letter will Assure a Reply.

QUESTION: What is a Koster blue spruce?—M. C. L., Pennsylvania.

ANSWER: The Koster blue spruce is a Colorado blue spruce (*Picea pungens*), which has been developed from an especially silvery blue specimen of regular pyramidal form. It must be propagated vegetatively and is always the result of grafting from material tracing back to the original Koster blue spruce. Grafting from some other especially blue spruce does not make a Koster blue spruce.

QUESTION: I have some trees I want to fertilize. The soil is a light, sandy loam near the sea. I am advised to use a high nitrogen complete fertilizer. Please explain.—C. T. K., Massachusetts.

ANSWER: This may be met by a commercial fertilizer, for which a common formula is 4-8-4. The first figure refers to four per cent of ammonia or nitrogen, the second to eight per cent of phosphoric acid and the third to four per cent of potash. The remainder of the fertilizer is filler of no particular assistance in growing plants. A too highly concentrated fertilizer would burn the plants and cause more damage than good.

A principal element in promoting green growth in any plant is nitrogen. Plants can stand heavy applications of highly nitrogenous fertilizer in the spring but not so much in the fall when the stimulus is likely to encourage vigorous fall growth, which may fail to harden in time for the early frost.

Getting down to the problem of a light sandy loam, one of the things most needed is probably more decaying vegetable matter, or humus. Farm yard manure is frequently difficult to get and expensive. Many farmers plant cow peas, or other leafy plants, and plow under in the late summer. Others allow the orchard to grow to weeds and plow them under before the seeds mature. The important thing is to get vegetable matter into the sandy loam soil to help hold moisture and eventually make plant food.

QUESTION: How large a tree can be moved satisfactorily, and does one gain by moving a very large one? Is there a point where the setback to the tree is such that in two or three years a smaller tree would have caught up with the larger one?—E. R., New York.

ANSWER: Trees up to fifty feet high and with a trunk twelve to sixteen inches in diameter are successfully moved but the cost may be prohibitive. A tree five to fifteen feet high, with a trunk diameter of three inches or less, can be established successfully and at not so great a cost. As one attempts to transplant larger trees the cost rapidly increases. While there is a gain to be secured by planting a large tree, each individual must determine whether the gain is worth the cost.

QUESTION: We have heard from various sources of a proposed expedition to be led by a fellow of the Royal Geographical Society to search for a mysterious palm tree which is said to grow on the Island of Madagascar. This is reported to devour annually some of the most beautiful maidens of that Island.—C. F. S., Maryland.

ANSWER: This was briefly reported by Chase S. Osborn in a book entitled "*Madagascar—Land of the Man Eating Tree*," but an inquiry to the Royal Geographical Society of London reveals that they have no reliable information regarding the alleged man eating tree, or anything regarding a proposed expedition to search for it.

QUESTION: Please give me information relative to Japanese Elm.—R. H. P., Washington.

ANSWER: Japanese Elm resembles English Elm but is recognized as Ulmus japonica. It is native to Japan, Manchuria and Amurland. Specimens have been growing in the Arnold Arboretum since 1895 where it grows fairly rapidly, has proved hardy and promises to be a valuable ornamental tree. It attains a height of 100 feet, has a broad head with more or less pendulous branches.

QUESTION: Kindly describe the southern smilax plant for help in identification.—A. P. R., South Carolina.

ANSWER: There are some twenty-five species of smilax native in the United States, of which the green brier is one. They are usually woody climbers with tendrils paired at the base of each petiole. The leaves have parallel main veins similar to the leaves of lilies, with a network of tiny veins reaching out from the main veins. The lower leaves may be reduced to scales. They bear small globular black or red berries.

The Florida smilax (*Smilax lancelota*), has spines only near the base, the lance-shaped leaves are whitish on the under side, and three seeded black berries. Like *Smilax Walter*, which has bright coral-red berries, it is gathered extensively from Virginia south to Florida for winter decorations.

QUESTION: What kind of a tree would be best to replace an old apple tree recently lost in a gale? Would the Siberian or Chinese elm be suited to this location and is it really such a fast grower as it is reputed to be?—E. R., New York.

ANSWER: The Chinese elm will grow in your vicinity and grows rapidly. It shows up best in a region of adversity, and is particularly well adapted to the western plains country where many other trees will not grow. The American elm is also recommended, as are also red oak, white oak, basswood or linden, white ash, tulip poplar and American black walnut.

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FORESTRY IN CONGRESS

The second session of the 72d Congress which ended on March 4 may be characterized as a no-progress session from the standpoint of conservation achievement. The several important measures that were carried over from the first session made little or no advance while new proposals of a constructive character were few in number and were given scant consideration. The Colton bill to redeem the resources of the Public Domain was passed by the House with an amendment that largely destroyed its usefulness, but died in the Senate. President Hoover's reorganization program was shelved by the Democratic tide of opinion. The bill to create the Everglades National Park after a manful struggle in the House failed to reach a vote. Recognition of forest work possibilities as a relief to unemployment got no farther than talk. The heated question of grazing fees on the National Forests flamed up in both houses but was cooled into inaction by the conflicting opinions of the two branches.

The session, however, was not wholly lacking in results. No vicious legislation tending to break down conservation was passed and established work, particularly in the field of forestry, maintained a gratifying position in point of financial support excepting for activities having to do with road building and other physical improvements. Appropriations for the Forest Service totaling $11,531,039 are $850,000 less than during the current year. About $230,000 will affect the work in hand but the other three-fourths is absorbed in legislative furloughs, which are in the nature of salary cuts. Appropriations for forest highways, roads and trails, and for reimbursements to the States made under separate headings bring the grand total available for Forest Service activities to $19,159,273. This is $15,773,666 less than was appropriated for similar activities during the present year. The reduction applies largely to forest improvements and road construction within the National Forests. Unless adjusted by later appropriations the loss of these funds threatens the entire construction program on the forests.

Forest Research and forest land acquisition were among the individual items to suffer most heavily. Only $85,854 was appropriated for forest purchases compared with $200,000 for the current year and $2,000,000 for a year ago. Chief Forester Stuart declared during Committee hearings that $85,854 is barely sufficient to complete title to lands whose purchase has been previously contracted. Forest planting and construction of improvements on National Forests received small increases.

The Biological Survey's total appropriation of $1,356,280 is $399,092 less than at present. As with the Forest Service, reductions were made in land acquisition and reserach. Efforts by Senator Norbeck, of South Dakota, and others, resulted in increases for the purchase of lands for migratory bird and game refuges to $194,300 but the conference committee quickly brought this back to the House figure of $81,700.

The Appropriation bill for the Department of the Interior was completed and signed on February 17. This includes $5,072,790 for the National Park Service which is $5,567,830 less than the current year's appropriation. Most of the reduction affects road and other construction funds. The forest lands on the Indian reservations will receive $340,521.67 together with $20,000 for controlling diseases on the Klamath Indian Reservation.

Other than appropriation bills, the legislation of special importance to receive affirmative action was for the creation of the Morristown Historical National Park in New Jersey. On March 2 President Hoover signed S. 5469 to maintain as a National shrine the historic buildings and over 1,000 acres made famous during the Revolutionary War. The land and old Ford House which served as Washington's headquarters will be presented to the Federal Government by the Washington Society of New Jersey and by Mr. Lloyd W. Smith.

Hearings before the Senate Committee on Public Lands on the Colton bill, H. R. 11816, as passed and amended by the House on February 7, brought out again the strong desire of certain Western Senators to cede all public lands with mineral rights to the states. On February 10, Senator Kendrick of Wyoming introduced a bill, S. 5613, to accomplish this. Much of the discussion before the committee centered on the amendment to the Colton bill (Section 13) which would make the legislation ineffective unless approved by the state legislatures and would subject the Secretary of the Interior to a joint arrangement with the State in creating and administering grazing districts on the Public Domain. The American Forestry Association objected to the bill with this amendment because of no clear assurance that a comprehensive and consistent system of management and reconstruction of the Public Domain would result. It was pointed out that the amendment would have the effect of tying the hands of the Secretary of the Interior in his administration of the range.

The Senate hearings revealed the hastily drawn amendment was accepted informally on the floor of the House because a majority of the committee members were convinced that otherwise it could not pass. Representatives Colton, of Utah, and Taylor, of Colorado, expressed willingness that Section 13 be deleted but Senator Walsh declared it was the only desirable feature of the bill. No report was made by the Committee which leaves the question of grazing administration on the Public Domain about as it was before the beginning of the Seventy-second Congress.

Representative Scott Leavitt's bill, H. R. 14755, introduced on February 22nd to appropriate $160,000,000 for work on National Forests received no action by the House but the way is opened for the introduction of a similar bill in the special session. Representative Leavitt presented figures to show that 269,668 men could be employed during a six-month period of field activity, in varying numbers on National Forests in thirty-eight States. In addition to constructing nearly 55,000 miles of roads and trails for protecting the forests from fire, there would be opportunities for thinnings and other improvements on 2,560,000 acres of forest land, the erection of 704 lookout houses and towers for detecting forest fires, and 9,844 miles of telephone line. The extermination of forest insects and diseases and the planting of trees on the National Forests could be advanced. "This," he concluded, "is merely speeding up in one year what will otherwise extend over a period of several years."

Lack of time prevented Mr. Leavitt from presenting in detail an argument for immediately resuming the purchase of forest lands. "At no time in our history," he said, "could they be acquired more easily than now, from farmers who have marginal land who would be glad to dispose of a part of their holdings, retaining only their agricultural land. That would put money in circulation with them, and would bring other forest land under the control of the Government." Then, referring to the fact that most of the $160,000,000 authorized in his

bill would be spent in Western States," he continued, "This useful labor in the development of those forest areas could be carried on more extensively in this eastern country."

Indian timber sale contracts may be reduced during the economic crisis, by order of the Secretary of Interior, with the consent of the Indians, and all future timber sales on the Klamath Indian Reservation in Oregon must be approved by the tribal council according to H. R. 6684 signed by President Hoover on March 4.

After a dramatic appeal to the House Committee on Public Lands, on February 14, Mrs. Ruth Bryan Owen of Florida secured a resolution to the Rules Committee of the House urging consideration of Senator Fletcher's bill, S. 475, for the establishment of the Everglades National Park in Southern Florida. In spite of this and other efforts no action was taken on the bill.

On February 14, identical bills were introduced in the Senate and the House by Senator Hayden, of Arizona, and Representative Arentz, of Nevada (S. 5637 and H. R. 14662), to provide for the creation of a Boulder Canyon National Reservation, an area of over one million acres. The boundaries would extend a mile back from the shores of the reservoir which will extend 115 miles after the completion of the Hoover Dam.

The proposed "National Reservation" would join the Grand Canyon National Monument created by Presidential Proclamation on December 22, 1932. These two areas combined with the Grand Canyon National Park would control the Colorado River for over 200 miles and place under National Park administration tracts whose combined area exceeds that of the Yellowstone National Park.

In a letter to Chairman Nye of the Senate Committee on Public Lands and Surveys, The American Forestry Association pointed out that the bill as drawn would apparently start a new system of federal reservations, the need of which might well be questioned. In this case, the National Park Service would be given authority to promote and regulate the recreational uses of the area, while the Bureau of Reclamation would retain responsibility for the Boulder Dam Project. At the same time mining and grazing would be permitted within the "National Reservation." Because of these and other questions, including the taxation of property within the State of Nevada, the Committee withheld action on the bill.

Senator Bratton's bill, S. 5538, to combine the Department of Agriculture and the Department of Interior into one Department of Conservation was not reported by the Committee on Public Lands to which it was referred.

Following President Hoover's proclamation of February 11, 1933, creating the Death Valley National Monument of 1,601,800 acres in southern California, Representative Arentz, of Nevada, introduced H. R. 14646 to protect the investments of Death Valley Scotty and to deed to him about 1,500 acres within the National Monument area. Although favorably reported by the House Committee on Public Lands no final action was taken by Congress.

FORESTRY APPROPRIATIONS

	Amounts Authorized by existing Acts	Amounts Actually Appropriated by Congress		1934 Decrease Below 1933
		1933	1934	
National Forests				
General Administration	.....	$352,580	$327,819	$24,761
Fire prevention	.....	2,159,555	1,981,066	178,489
Construction of improvements	.....	637,864	653,089	15,225+
Control of insects & diseases	.....	393,335	363,851	29,484
Planting on National Forests	$400,000	154,200	214,070	59,870+
Sanitary and fire-prevention facilities on public camp grounds	.....	67,000	65,000	2,000
Improvements on National Forests	.....	1,019,640	987,084	32,556
Acquisition of additional forest land	3,000,000	200,000	85,854	114,146
Other Items for Administration, Protection, Etc.	.....	4,196,120	3,811,434	384,686
Clarke-McNary Law				
Forest-fire cooperation	2,500,000	1,611,580	1,587,513	24,067
Cooperative distribution forest planting stock	100,000	79,960	74,730	5,230
McNary-McSweeney Law				
Forest management at forest experiment stations	1,000,000	534,280	492,671	41,609
Range investigations	275,000	123,030	100,000	23,030
Forest Products Laboratory	1,000,000	613,640	566,791	46,849
Forest survey	250,000	170,280	160,067	10,213
Forest economic studies	250,000	70,240	60,000	10,240
Totals	.....	$12,383,304	$11,531,039	$852,265*

* This represents a reduction of $227,357 working funds, while the remaining $624,908 is adjusted as salary reductions under the legislative furloughs.

Additional Appropriations for Forestry but Administered by Other Agricultural Bureaus

	Act Authorization	Appropriated 1933	Appropriated 1934	1934 Decrease Below 1933
Clarke-McNary Law				
Forest Extension	$100,000	$69,850	$64,787	$5,063
McNary-McSweeney Law				
Forest diseases	250,000	120,000	112,560	7,440
Forest insects	250,000	209,790	179,970	29,820
Forest wild life	150,000	20,000	16,000	4,000
Forest fire weather	50,000	4,650	4,288	362
Erosion studies (cooperative) includes $30,000 for the Forest Service	.....	289,160	276,474	13,686

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FOREST PAGE FOR BOYS AND GIRLS

(*Continued from page* 172)

is likely to descend. A marsh is rank with odors of decayed vegetation even in dry weather. However, these are rather flimsy threads on which to hang a storm. This increased keenness of smelling may account for horses and cattle stretching out their necks, sniffing the air and calling frequently, which acts are said to be sure signs of rain. Fact is, barnyards antedated barometers as weather forecasters—

"Grumphie smell the weather
An' Grumphie smells the wun' (wind)
He kens when clouds will gather
An' smoor the blinkin' sun."

Grumphie in this verse is a pig, and Grumphie like all animals feels depressed, out of spirits when a storm is brewing. The lower the atmospheric pressure, the lower the spirits. Of course this is not real meteorology; it might be called "barnyardology." Therein lies the explanation for the popularity of the "West Wind;" it is a tonic and we feel like leaping and shouting. It burdens us with about a half ton of excess atmospheric weight but

The wind in the West
Suits everyone best.

The winds are good weather signals because they drive the clouds. Some winds carry moist air and others dry air. A wind from the west means dry air and clear weather. Upon the higher levels of the northwest (Medicine Hat is often called the weather manufacturing center) cold weather accumulates and spreads out like ice cream on a plate. These winds bring cool weather in summer and cold crisp weather in winter. The weather man calls these anticyclonic and he is most popular when he forecasts these winds. When the wind blows from the East, the familiar saying tells the probability—

Rain from the East—
Two days at least.

Fires burn more briskly in dry air than in moist, and some plants close their flowers or shift their leaves before a rain. Bugs and flies are especially annoying before a storm, and insects do not fly so high which is shown by the fact that the birds which feed on them fly lower. The chimney swifts are especially good guides to the different altitudes that insects fly. A mention was made that animals seem to know the feel of the atmosphere that precedes a storm. Among numerous sayings covering this phase are:

Seagull, seagull, sit on the sand,
It's never good weather while you're on the land.

When black snails on the road you see
Then on the morrow rain will be.
And it is said of the canny bee

When bees to distance wing their flight
Days are warm and skies are bright;
But when their flight ends near at home,
Stormy weather is sure to come.

The spiders are just as wary as the bees for they never spin a web on grass on the day that brings rain. The frequent lowing of cattle and the call of the cuckoo (both yellow and black billed) are signs which if read in combination with signs in the sky are helpful as forecasters; and when we come to suffering mortals we can observe with much truth that

"Old sinners have old points
O' the compass in their bones and joints."

An ache in a rheumatic joint or old wound gives testimony. Coming from here, there, and everywhere are many common proverbs indicative of rain—

When salt gets damp, rain is expected.

When tobacco scent is retained longer and is stronger than usual, a storm is imminent.

When ants travel in straight lines expect a storm, and fair weather when they scatter.

Excessive twinkling of the stars indicates heavy dew and rain.

A bee is never caught in a shower.

When fish bite readily and swim near the surface, rain may be expected.

If corns and sores itch more than usual, rain is on its way.

Now let's get out into the weather. A most fascinating activity is the study of tracks and making plaster casts of them. Boys get so skilled in reproducing imprints from moist sand and mud that the resulting placques are really interesting pieces of artistry. It is so simple a thing to do that shoddy work often comes from sheer carelessness. The equipment consists of a strip of tin about two inches wide and at least eighteen inches long; a can of talcum powder, a can of automobile oil; a can for mixing the plaster, and the plaster of Paris itself. About the only expense connected with this work is the plaster of Paris which can be purchased in bulk at five cents a pound. Find a track that shows good detail. Dust the ground around the track with the talcum and pour oil over it. This operation provides a smooth surface and prevents the grains of dust from adhering to the plaster. Boys who are looking for fine results dissolve paraffin in gasoline and spray the ground and track with an atomizer. Now make a wall around the track with the tin strip. Be very careful not to distort the track when pushing the tin into the dirt. Mix the plaster of Paris by pouring the water on to the powder stirring meanwhile until it is just thin enough to pour easily. When too thin the plaster may crack upon drying. Pour quickly upon mixing for when it hardens it can't be poured, and once hard it cannot be remixed.

In about twenty minutes the cast is hard enough to be lifted. Remove the tin, but make no attempt to remove the dirt until the cast has hardened for a few hours. The resulting embossment is called a negative. It is the reverse of the imprint. It can be made attractive by painting the embossment green or brown with a background a lighter shade of the same color. But if a positive is desired, cover the face of the negative well with either vaseline, talcum or paraffin. Make a wall around the negative using the tin strip, making sure that the wall is higher than the highest point in the negative. Mix the plaster of Paris and pour over the face of the negative. If the negative was well surfaced with vaseline, talcum or paraffin, the positive can be removed easily after drying about half an hour. Now color the track a deep gray or brown and the background a lighter shade of the same color and the result is an attractive study to hang in the home museum. It is a trophy of a hunt. To provide a hanger for the case imbed a loop of cord in the back of the cast just after pouring the plaster. In making an exhibit of the work of many boys, the copies may be placed on flat surfaces and along side of each the name and place where the cast was made and a picture of the animal or bird making such track.

Many other things can be made with plaster of Paris, among them leaf prints. This will be described in a future issue when the leaves are fully developed.

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The EDUCATION OF THE PUBLIC, especially school children, in respect to our forests and our forest needs; a more aggressive policy of RESEARCH AND EDUCATIONAL EXTENSION in the science of forest production, management, and utilization, by the nation, individual states, and agricultural colleges; reforms in present methods of FOREST TAXATION, to the end that timber may be fairly taxed and the growing of timber crops increased.

Member A. B. C.

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CONSERVATION LEADERS IN THE NEW CABINET

(*Continued from page* 155)

people, but not to be wasted, deteriorated, or needlessly destroyed.

"We agree that our country's future is involved in this: That the great natural resources supply the material base upon which our civilization must continue to depend, and upon which the perpetuity of the nation itself rests."

When the National Conservation Association, of which Gifford Pinchot was president, was established in 1909, Mr. Ickes became the Illinois member of its national committee. On this committee were such well known conservationists as Henry C. Wallace of Iowa and George C. Pardee of California. Mr. Ickes was with Theodore Roosevelt in the Bull Moose Progressive Movement of 1912 and served for several years as Chairman of the Illinois Progressive State Committee and as a member of the Progressive National Committee. In 1924 he was Illinois manager of Hiram W. Johnson's presidential campaign. He has long been a member of The American Forestry Association and is also a member of the Advisory Board of the Quetico-Superior Council. In 1929 Mr. Ickes joined with an eminent group of men and women in an open letter to President Hoover urging that he call a national conference to consider the common interests of the nation in the conservation of natural resources and to provide for an inventory of those resources throughout the world. "As citizens of the United States persuaded of the necessity for conserving the material basis of prosperity not only in our own country but of the whole world," the letter read, "we earnestly and respectfully ask you to consider the advisability of calling an international conference to discuss the common interests of the nation in the conservation of natural resources.* * * We are convinced that the fundamental importance of this matter, upon which the civilization, welfare and mutual helpfulness of the nations directly depend, warrants us in calling it to your attention at the outset of your administration." Reference was made to the fact that such a project had been initiated in 1909 by President Theodore Roosevelt, and the letter closed with the expressed belief that "so great and beneficent a project initiated by the United States, received with approval by the great majority of the nations and so clearly harmful to none and helpful to all, may appropriately be revived and carried to completion by the country of its origin."

Although a resident of the Middle West Mr. Ickes has spent much time in the far West. He knows its problems and he unquestionably sees them through the eyes of the conservationist.

THE "SPOON-BILL CAT"

(*Continued from page* 170)

various species of catfish when the water is at a certain stage. I have never caught a game fish on the peculiar tackle used for "spoon-bills."

I shall never forget the first "spoon-bill" tackle I ever saw. The rig was a tarred trot-line with hooks fourteen inches apart and on fourteen inch drops. And not an ounce of bait. The fish hook themselves without the deception of a lure.

Before setting, the hooks on each line are hung in order around the rim of a tub. The tub is then placed in the skiff, the loose end of the line tied to a bush on the shore, and the line unwound as the boat crosses and recrosses the lake or river.

Although it may seem simple, this kind of fishing calls for the utmost in experience. A fair catch may be made with the hooks just below the water's surface; again it may be necessary for them to hang just clear of the bottom. And any mark between the two extremes may be the proper depth. The range is as uncertain as the fish is mysterious.

WHO'S WHO

Among the Authors in This Issue

R. S. MADDOX (*Reclaiming Tennessee Lands*) is Assistant State Forester of Virginia, with headquarters at Charlottesville. He was for a number of years State Forester of Tennessee.

Axel H. Oxholm

AXEL H. OXHOLM (*Wood's Challenge*) is Director of the National Committee on Wood Utilization of the United States Department of Commerce. Born and educated in Norway, he has been active in promoting forestry and wood using practices in this country and abroad and has introduced many practical ideas of timber utilization.

JAMES MACGILLIVRAY (*When Pine Was King*) has written much about the Michigan lumberjack. As far back as 1888 he was writing "Deacon Seat Tales" and probing into the mysteries of Paul Bunyan. More recently he has turned to wild life photography and conducts a studio at Oscoda, Michigan.

JOHN T. GIBBS (*Tree Planting Aids Unemployment*) is Secretary of the Conservation Department of the State of New York, with headquarters at Albany.

Ben East

BEN EAST (*The Homes of Birds*) is Nature Editor of the *Grand Rapids (Michigan) Press*, and conducts an outdoor page for a number of newspapers in the Lake States. For a number of years he has contributed articles and illustrations to AMERICAN FORESTS, dealing chiefly with birds and bird life. He is an expert photographer of wild life.

LEE EMMETT YEAGER (*The "Spoon-Bill Cat"*) is a native of Mississippi, and at the present time doing special work in Botany and Zoology at the Mississippi A. & M. College. He writes: "I am most interested in conservation . . . . no other work appeals to me so strongly . . . . we must protect our natural resources—our fish, game, forests and soil. We must plant, propagate and protect."

WAKELIN MCNEEL (*A Forest Page for Boys and Girls*) has for a number of years been exceedingly active with boys and girls in conservation work. As Assistant State Club Leader of Wisconsin he makes his headquarters at Madison.